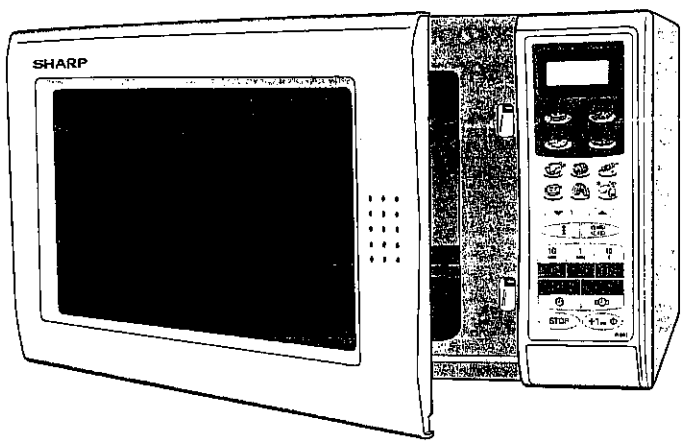
SHARP® SERVICE MANUAL

S8806R-951EHW



GRILL AND CONVECTION MICROWAVE OVEN

MODELS R-951(W) R-951(K) R-951B(W)F

In interests of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

CAUTION
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating devices if it is improperly used or connected. All input and output microwave connections, waveguides, flanges and gaskets must be secured.
Never operate the device without a microwave energy absorbing load attached.
Never look into an open waveguide or antenna while the device is energized.

VARNING
MICKROVAGSSTRALING

Personal får inte utsättas för mikrovågsenergi som kan ustrala från magnetronen eller andre mikrovågsalstrande anordningar om dessa är felanslutna eller används på fel sätt. Alla in-och utgångsanslutningar för mikrovågor, vagledare, flänsar och packningar måste vara fast anslutna.
Mikrovågsgeneratorn får inte arbeta utan att absorberande belastning är ansluten. Titta aldrig in i ën öppen vågledare eller antenn när mikrovågsgeneratorn är påkopplad eller laddad.

VAROITUS
MIKROAALTOSÄTELYÄ

Käyttäjä ei saa joutua alttiiksi mikroaaltoenergialle, jota voi säteillä magnetronista tai muusta mikroaaltoja kehittävästä laitteesta, jos sitä käytetään tai jos se kytketään väärin. Kaikkien mikroaaltoliitäntöjen sekä syöttö-että ulostulopuolella, aaltoputkien laippojen ja tiivisteiden tulee olla varmistettuja.
Mikroaaltouunnia ei koskaan saa käyttää ilman kuormaa jossa mikroaaltoenergiaa kuluu. Avoimeen aaltoputkeen tai antenniin ei koskaan saa katsoa virran ollessa kytkettynä.

ADVARSEL
MIKROBØLGESTRÅLING

Personell må ikke utsettes for mikrobølge-energi som kan utståles fra magnetronen eller andre mikrobølge-generende deler dersom apparatet feilbetjenes eller blir feiltikoplet.
Alle inn-og ut-tilkoplinger i forbindelse med mikrobølge-strålingen, bølgeledere, flenser og tetningsringer/pakninger må festes ordentlig.
Aldri bruk apparatet med mindre en mikrobålge-absorberende last er plassert i ovnsrommet.
Aldri se direkte inn i en åpen bølgeleder eller antenne imens apparatet er strømførende.

ADVARSEL
MIKROBØLGEBESTRÄLING

Man bør ikke udsætte sig for mikrobølgebestråling fra magnetronen eller andre mikrobølgefrembringende anordninger, hvilket kan ske hvis apparatet er forkert tilsluttet eller bruges forkert. Alle mikrobølgeindgange og-udgange, bølgeledere, flanger og tætningsstrimler må være forsvarligt udført.
Anvend aldrig ovnen uden en mikrobølgesabsorberende anordning. Se aldrig ind i en åben bølgeleder eller antenne, mens ovnen er i brug.

SHARP

GRILL AND CONVECTION MICROWAVE OVEN

R-951

GENERAL IMPORTANT INFORMATION

This Manual has been prepared to provide Sharp Corp. Service engineers with Operation and Service Information.

It is recommended that service engineers carefully study the entire text of this manual, so they will be qualified to render satisfactory customer service.

CAUTION
MICROWAVE RADIATION

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

WARNING

Note:	The parts marked "*" are used in voltage more than 250V. (Parts List)
Anm:	Delar märket med "*" har en spänning överstigande 250V.
Huom:	Huolto-ohjeeseen merkitty "tähdella" osat joissa jännite on yli 250 V.
Bemerk:	Deler som er merket "asterisk" er utsatt for spenninger over 250V til jord.
Bemærk:	"Dele mærket med stjerne benyttes med højere spænding end 250 volt.

WARNING

Never operate the oven until the following points are ensured.
(A) The door is tightly closed.
(B) The door latches and hinges are not defective.
(C) The door is not deformed or warped.
(D) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained service engineers.

The parts marked "*" on the parts list and schematic diagram have voltages in excess of 250v.

Removal of the outer wrap gives access to potentials above 250V.

All the parts marked "Δ" on the parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

SHARP CORPORATION
OSAKA, JAPAN

PRODUCT SPECIFICATIONS
GENERAL INFORMATION
APPEARANCE VIEW
OPERATING SEQUENCE
FUNCTION OF IMPORTANT COMPONENTS
SERVICING AND TROUBLESHOOTING CHART
TEST PROCEDURE
TOUCH CONTROL PANEL
COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE
MICROWAVE MEASUREMENT
TEST DATA AT A GLANCE
WIRING DIAGRAM
PARTS LIST

SERVICING

WARNING TO SERVICE PERSONNEL

(GB) Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts will result in electrocution.
High voltage capacitor, Power transformer, Magnetron, High voltage rectifier assembly, High voltage harness.

REMEMBER TO CHECK 3D

1) Disconnect the supply.
2) Door opened, and wedged open.
3) Discharge high voltage capacitor.

WARNING AGAINST THE CHARGE OF THE HIGH-VOLTAGE CAPACITOR
The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is, of the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Sharp recommend that wherever possible fault-finding is carried out with the supply disconnected. It may in, some cases, be necessary to connect the supply after the outer case has been removed, in this event carry out 3D checks and then disconnect the leads to the primary of the power transformer. Ensure that these leads remain isolated from other components and the oven chassis. (Use insulation tape if necessary.) When the testing is completed carry out 3D checks and reconnect the leads to the primary of the power transformer.

REMEMBER TO CHECK 4R

1) Reconnect all leads removed from components during testing.
2) Replace the outer case (cabinet).
3) Reconnect the supply.
4) Run the oven. Check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out 3D checks and re-examine the connections to the component being tested.

When all service work is completed, and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test carried out.

(NL) Magnetronovens bevatten circuits die een zeer hoge spanning en stroom kunnen voortbrengen. Contact met de volgende onderdelen kan elektrocutie tot gevolg hebben.
Hoogspanningscondensator, hoogspanningstransformator, magnetron, hoogspanningsgelijkrichter, hoogspannings kabelboom.

VERGEET DE VOLGENDE 3 STAPPEN NIET

1) Haal de stekker uit het stopcontact.
2) Open de deur en zorg ervoor dat hij niet dicht kan vallen.
3) Ontlaad de hoogspanningscondensator.

PAS OP VOOR DE ELECTRISCHE LADING VAN DE HOOGSPANNINGSCONDENSATOR
De hoogspanningscondensator blijft nog ongeveer 60 seconden lang opgeladen, nadat de oven is uitgeschakeld. Wacht 60 seconden voordat u de verbinding van de hoogspannings-condensator (m.a.w. de verbindingsdraad van de hoogspanningsgelijkrichter) met een geïsoleerde schroevedraaier kortsluit tegen het chassis.

Sharp beveelt ten sterkste aan dat, voor zover mogelijk, defecten worden opgespoord wanneer de stekker uit het stopcontact is gehaald. Soms is het nodig om de stroomtoevoer weer tot stand te brengen nadat de buitenmantel verwijderd is. Herhaal dan de bovengenoemde 3 stappen en haal de electrische draden uit de primaire zijde van de vermogenstransformator. Zorg ervoor dat deze draden geïsoleerd blijven van andere elementen en van het chassis van de oven. (Gebruik zo nodig isolatieband.) Wanneer de test is uitgevoerd, herhaalt u de bovenstaande 3 stappen en verbindt u de electrische draden weer aan de primaire zijde van de vermogenstransformator.

VERGEET DE VOLGENDE 4 STAPPEN NIET

1) Sluit de draden weer aan diezijn losgehaald voor de test.
2) Plaats de buitenmantel weer om het toestel heen (kabinet).
3) Stop de stekker weer in het stopcontact.
4) Zet de oven aan. Controleer alle functies.

Magnetronovens mogen niet leeg aangezet worden. Om te controleren of er microgolf-energie binnen de oven wordt geproduceerd, plaatst u een mok met koud water op de draaitafel van de oven, sluit de deur, zet de oven op HIGH en stelt de klok van de magnetron in op twee (2) minuten. Wanneer de twee minuten voorbij zijn (klok staat op nul), controleert u voorzichtig of het water heet is. Indien het water nog steeds koud is, herhaalt u de allereerste drie stappen en controleer nogmaals de aansluitingen naar de geteste onderdelen.

Wanneer alle reparaties zijn uitgevoerd en de oven weer in elkaar is gezet, moet de het magnetronvermogen worden gecontroleerd en moet worden gecontroleerd of er geen microgolflekkage is.

(E) Los hornos de microondas contienen circuitos eléctricos capaces de producir voltajes de alta tensión y descargas eléctricas. Para evitar el riesgo de electrocución, absténgase de tocar los siguientes componentes: condensador de alta tensión, transformador de alta tensión, magnetrón, dispositivo del rectificador de alta tensión y arnés de alta tensión.

RECUERDE LA COMPROBACION 3D

1) Desconecte la alimentación.
2) Deje la puerta abierta y calzada.
3) Descargue el condensador de alto voltaje.

ADVERTENCIA SOBRE LA CARGA DEL CONDENSADOR DE ALTO VOLTAJE
El condensador de alto voltaje permanece cargado unos 60 segundos después de haber apagado el horno. Espere 60 segundos y luego ponga en cortocircuito la conexión del condensador de alto voltaje (esto es, del conductor de conexión del rectificador de alto voltaje) al chasis con un destornillador de mango aislado.

Se recomienda encarecidamente que siempre que sea posible la localización de fallos se realice con la alimentación desconectada. Puede ser que en algunos casos sea necesario conectar la alimentación después de haber retirado la carcasa exterior. En este caso, realice las comprobaciones 3D y luego desconecte los conductores del primario del transformador de alimentación. Asegúrese de que estos conductores permanezcan aislados de otros componentes y del chasis del horno. (Use cinta aislante si es necesario). Cuando termine la prueba efectúe las comprobaciones 3D y reconecte los conductores al primario del transformador de alimentación.

RECUERDE LA COMPROBACION 4C

1) Conecte todos los componentes desconectados de los componentes durante la prueba.
2) Coloque la carcasa exterior (cabina).
3) Conecte la alimentacion.
4) Compruebe todas sus funciones despues de poner en marcha el horno.

Los hornos de microondas no deben funcionar vacíos. Para comprobar la presencia de energía de microondas dentro de una cavidad, coloque una taza de agua fría en el plato giratorio del horno, cierre la puerta y ponga la potencia en HIGH (alta) y coloque el temporizador en dos (2) minutos. Cuando transcurran los dos minutos (temporizador a cero) compruebe cuidadosamente que el agua se ha calentado. Si el agua permaneciese fría, efectúe las comprobaciones 3D y vuelva a examinar las conexiones de los componentes que han sido probados.

Cuando haya terminado la intervención en el equipo y el horno haya sido ensamblado de nuevo completamente, deberá comprobar la potencia de salida de microondas y realizar una prueba de fugas de microondas.

(SV) Mikrovågsugnar innehåller kretsar som producerar mycket höga spänningar och strömmar.
Kontakt med följande komponenter kan leda till dödsfall:
Högspänningskondensator, transformator, magnetron, högspännings likriktare, högspännings kablage.

KOM IHÅG ATT KONTROLLERA 3 STEG

1) Koppla från strömkällan.
2) Öppna dörren på gänt.
3) Ladda ur högspänningskondensatorn.

VARNING FÖR LADDNINGEN I HÖGSPÄNNINGSKONDENSATORN
Högspänningskondensatorn är laddad i 60 sekunder efter det att ugnen stängts av. Vänta 60 sekunder och korislut sedan kondensatoms anslutning (dvs anslutningen till högspänningslikriktaren) till chassiet med hjälp av en isolerad skruvmejsel.

Sharp rekommenderar att felsökning sker med strömmen frånkopplad. Ibland kan det var nödvändigt att koppla på strömmen efter det att höljet avlägsnats, utför da 3 Steg kontrollen och koppla sedan från ledarna till transformatorns primärsida. Se till att ledarna är isolerade från andra komponenter och chassiet. (Använd isoleringsband om det behövs). När Du testat färdigt utför Du 3 Steg kontrollen och ansluter ledningarna till transformatorns primärsida igen.

KOM IHÅG ATT KONTROLLERA 4 STEG

1) Anslut alla ledningar som använts vid testning
2) Sätt tillbaka ytterhöljet.
3) Anslut strömkällan på nytt.
4) Sätt på ugnen. Kontrollera alla funktioner.

Mikrovågsugnar får inte användas tomma. Kontrollera mikrovågsstrålningen i olika delar av ugnen genom att placera en kopp med kallt vatten på ugnens tallrik, stäng dörren, ställ in HIGH och ställ in 2 minuter på timern. När två minuter har gått (timem visar 0) kontrollerar du om vattnet är varmt. Om vattnet fortfarande är kallt utför Du 3 steg kontroller och kontrollerar anslutningarna till varje enskild komponent på nytt.

När all service är klar och ugnen ihopskruvad skall ugnens uteffekt och eventuellt mikrovågsläckage kontrolleras.

(1) I forni a microonde contengono un circuito elettrico in grado di generare tensioni e correnti estremamente elevate. L'eventuale contatto con i seguenti componenti può causare la folgorazione:

condensatore ad alta tensione; trasformatore ad alta tensione; magnetron; rettificatore alta tensione; cablaggio ad alta tensione.

TRE OPERAZIONI IMPORTANTI PER INCOMINCIARE

1) Scollegare l'alimentazione elettrica.
2) Verificare che la porta sia bloccata in posizione aperta.
3) Scaricare il condensatore ad alta tensione.

ATTENZIONE AL CONDENSATORE AD ALTA TENSIONE: PUO ESSERE CARICO
Il condensatore ad alta tensione rimane carico per circa 60 secondi dopo lo spegnimento del forno. Occorre quindi spettare 60 secondi prima di cortocircuitare, utilizzando un cacciavite con impugnatura isolata, il collegamento del condensatore ad alta tensione (cioè del conduttore di collegamento del raddrizzatore ad alta tensione) sul telaio del forno.

Sharp raccomanda, nei limiti del possibile, che la ricerca dei guasti avvenga in assenza di alimentazione elettrica. In alcuni casi tuttavia, può essere necessario alimentare l'apparecchio dopo aver rimosso la scatola esterna. In questo caso eseguire i tre controlli sopra citati e quindi scollegare i connettori dal primario del trasformatore. Assicurarsi che tali connettori non vengano a contatto con altri componenti, ne con il telaio del forno (fare uso, se necessario, di nastro isolante). Al termine dell'intervento, eseguire nuovamente i tre controlli e ricollegare i conduttori al primario del trasformatore.

QUATTRO VERIFICHE IMPORTANTI DA NON DIMENTICARE

1) Ricollegare tutti i conduttori staccati dai vari componenti durante l'intervento.
2) Rimontare la scatola esterna.
3) Ripristinare l'alimentazione elettrica.
4) Rimettere in funzione il forno. Controllare tutte le funzioni.

I forni a microonde non devono mai funzionare a vuoto. Per verificare la presenza di energia da microonde all'interno di una cavitá, mettere una tazza di acqua fredda sul piatto rotante del forno, chiudere la porta, regolare la potenza su HIGH ed impostate il temporizzatore su due (2) minuti. Trascorsi i due minuti (temporizzatore a zero), controllare accuratamente che ora l'acqua sia calda. Se l'acqua è rimasta fredda, eseguire i tre controlli iniziali e verificare nuovamente i collegamenti del componente in questione.

Dopo aver portato a termine le operazioni di manutenzione e rimontato il forno, è necessario controllare la potenza delle microonde emesse ed eseguire un test per verificare che non vi sia alcuna dispersione.

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure" section.

IMPORTANT: If the oven becomes inoperative because of a blown fuse F8A in the monitored latch switch - monitor switch circuit, check the monitored latch switch and monitor switch before replacing the fuse F8A.

PRODUCT DESCRIPTION

ITEM	DESCRIPTION
Power Requirements	230 Volts / 50 Hertz / Single phase, 3 wire earthed
Power Consumption	Microwave cooking 1.6 kW Approx. 7.0A
	Dual cooking (Microwave and Grill) 2.8kW Approx. 12A (Microwave and Convection) 2.9kW Approx. 12.5A
	Convection cooking Max. 1350W Approx. 5.5A
	Grill cooking Max. 2.55kW Approx. 11A
Power Output	1000 watts nominal of RF microwave energy (measured by method of IEC 705) Operating fequency 2450 MHz
Convection heating element Power Output	1.3kW
Grill heating element Power Output	1.2kW (600W x 2)
Case Dimensions	Width 550 mm Height 342 mm (including foot) Depth 524 mm
Cooking Cavity Dimensions	Width 390 mm Height 240 mm Depth 395 mm
Turntable diameter	360mm
Control Complement	Touch Control System Timer (0 - 99 min.) Microwave Cooking Control Repetition Rate; HIGH..... Full power throughout the cooking time MEDIUM HIGH..... approx. 70% of FULL Power MEDIUM ..... approx. 50% of FULL Power MEDIUM LOW ..... approx. 30% of FULL Power LOW ..... approx. 10% of FULL Power Convection temperature control range; 250°C, 230°C, 220°C, 200°C, 180°C, 160°C, 130°C, 100°C, 70°C and 40°C POTATO keys, INSTANT ACTION keys; LESS(▼)/MORE(▲) keys, Time keys, MICROWAVE key GRILL key, CONVECTION key, DUAL COOK key ROTISSERIE key, MINUTE TIMER/HOLD key CLOCK SETTING key, STOP key, MINUTE PLUS/START key
Set Weight	Approx. 27 kg

GENERAL IMPORTANT INFORMATION

WARNING

THIS APPLIANCE MUST BE EARTHED

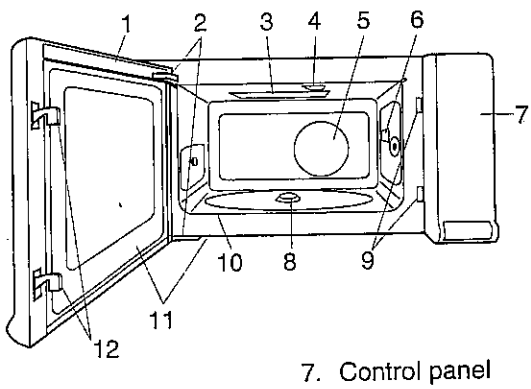
IMPORTANT

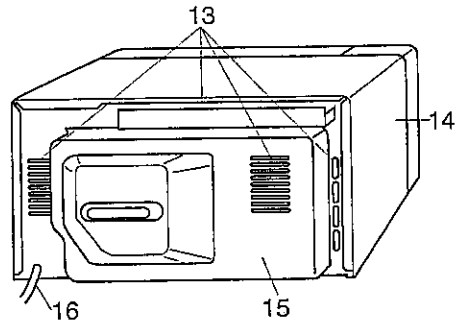
THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

GREEN-AND-YELLOW	: EARTH
BLUE	: NEUTRAL
BROWN	: LIVE

APPEARANCE VIEW

OVEN





1. Door
2. Door hinges
3. Grill heating elements
4. Oven lamp
5. Convection air opening
6. Waveguide cover
7. Control panel
8. Coupling
9. Door lock openings
10. Oven cavity
11. Door seals and sealing surface
12. Safety door latches
13. Ventilation openings
14. Outer cabinet
15. Back plate
16. Power supply cord

CONTROL PANEL

1. DISPLAY AND INDICATORS
2. SNACK keys
3. POTATO keys
4. INSTANT ACTION keys
5. MORE(▲)/LESS(▼) keys
6. LANGUAGE keys
7. TIME keys
8. CONVECTION key
9. ROTISSERIE key
10. CLOCK SETTING key
11. MINUTE PLUS/START key
12. STOP key
13. MINUTE TIMER/HOLD key
14. CLOCK SETTING key
15. MICROWAVE key
16. GRILL key
17. INFO keys

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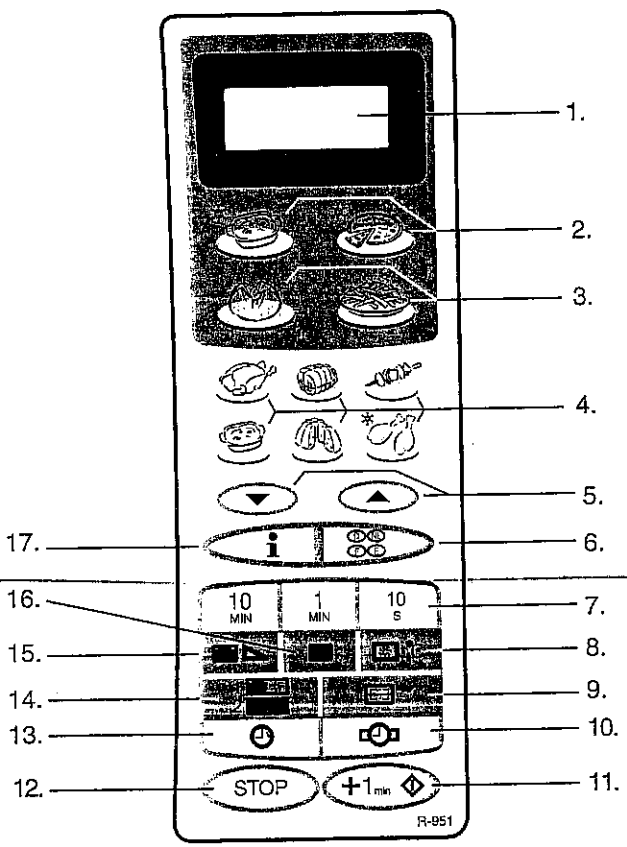

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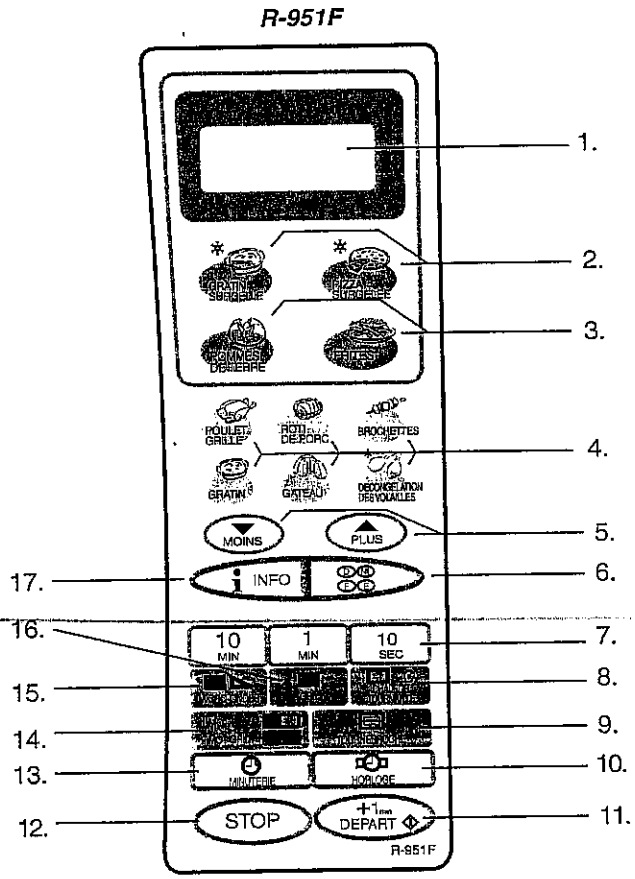


OPERATION SEQUENCE

OFF CONDITION

Closing the oven door activates all door interlock switches (monitored latch switch, monitor switch and door switch.

IMPORTANT:

When the oven door is closed, the contacts COM-NC of the monitor switch SW2 must be open and the contacts (COM-NO) must be closed. When the microwave oven is pluged in a wall outlet (230V / 50Hz), 230 volts A.C. is supplied to the point E1 + E3 in the control unit.

Figure O-1 on page 38

1. The display flashes "88:88"
2. To set any programmes or set the clock, you must first touch the STOP key.
3. " : " appears in display.

NOTE: When the oven door is opened, the oven lamp comes on at this time.

MICROWAVE COOKING CONDITION

HIGH COOKING

Enter a desired cooking time with the touching Time key and start the oven with touching START key.

Function sequence Figure O-2 on page 38

CONNECTED COMPONENTS	RELAY
Oven lamp, Turntable motor	RY1
High voltage transformer	RY1 + RY2
Fan motor	RY5

1. 230 volts A.C. is supplied to the primary winding of the high voltage transformer. The voltage is converted to about 3.3 volts A.C. output on the filament winding and high voltage of approximately 2000 volts A.C. on the secondary winding.
2. The filament winding voltage (3.3 volts) heats the magnetron filament and the high voltage (2000 volts) is sent to the voltage doubling circuit, where it is doubled to negative voltage of approximately 4000 volts D.C..
3. The 2450 MHz microwave energy produced in the magnetron generates a wave length of 12.24 cm. This energy is channelled through the waveguide (transport channel) into the oven cavity, where the food is placed to be cooked.
4. When the cooking time is up, a signal tone is heard and the relays RY1 + RY2 + RY5 go back to their home position. The circuits to the oven lamp, high voltage transformer, fan motor and turntable motor are cut off.
5. When the oven door is opened during a cooking cycle, the switches come to the following condition.

Switch	Contact	Condition	
		During Cooking	Oven Door Open(No cooking)
Monitored latch Switch	COM-NO	Closed	Opened
Monitor Switch	COM-NO	Closed	Opened
Monitor Switch	COM-NC	Opened	Closed
Stop switch	COM-NO	Closed	Opened

The circuit to the high voltage transformer, is cut off when the contact of relay RY2, contacts COM-NO of the monitored latch switch, and contacts COM-NO of monitor switch SW2 are made open. The circuit to the fan motor is cut off when the relay RY5 is made open. The circuit to the turntable motor is cut off when the contacts COM-NO of the monitored latch switch are made open. The relay RY2 and RY5 are made open when the door is opened. The oven lamp remains on even if the oven door is opened after the cooking cycle has been interrupted, because the relay RY1 stay closed. Shown in the display is remaining time.

6. MONITOR SWITCH CIRCUIT
   The monitor switch SW2 is mechanically controlled by the oven door, and monitors the operation of the monitored latch switch SW1.

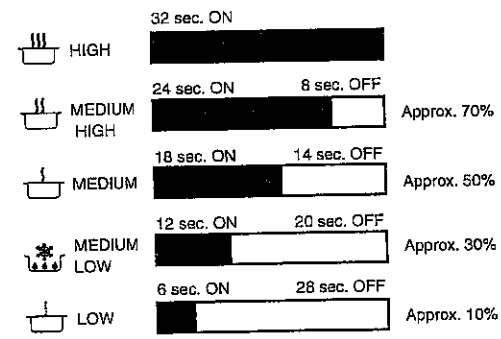
6-1. When the oven door is opened during or after the cycle of a cooking program. the monitored latch switch SW1 must open its contacts (COM-NO) first. After that the contacts (COM-NC) of the monitor switch SW2 can be closed and the contacts (COM-NO) of the stop switch SW3 are made open.

6-2. When the oven door is closed. The contacts (COM-NC) of the monitor switch SW2 must be opened and the contacts (COM-NO) of monitor switch SW2 must be closed, and the contacts (COM-NO) of the stop switch SW3 must be closed. After that the contacts of the monitored latch switch SW1 are made closed.

6-3. When the oven door is opened and the contacts of the monitored latch switch SW1 remain closed, the fuse F2 F8A will blow. Because the monitor switch SW2 is closed and a short circuit is caused.

MEDIUM HIGH, MEDIUM, MEDIUM LOW, LOW COOKING

When the microwave oven is preset for variable cooking power, the 230 volts A.C. power is supplied to the high voltage transformer intermittently within a 32-second time base through the relay contact which is coupled with the current-limiting relay RY2. The following levels of microwave power are given.



Note: The On/Off time ratio does not exactly correspond to the percentage of microwave power, because approx. 3 seconds are needed for heating up the magnetron filament.

CONVECTION COOKING CONDITION

PREHEATING CONDITION (Figure O-3)

Program desired convection temperature by touching CONVECTION key. When the START key is touched, the following operations occur:

1. The coil of shut-off relays RY1, RY6 and RY5 are energized, and the oven lamp, cooling fan motor, turntable motor and convection motor are turned on.
2. When an oven temperature below 160°C is programmed, the shut-off relay RY3 is energized and the convection heating element is turned on.
   When an oven temperature above 180°C is programmed, not only the relay RY3 but also the relay RY4 is energized and grill heating element is turned on to heat the oven cavity faster.

3. In the case of an oven temperature below 160°C being programmed, when the oven temperature reaches the selected preheat temperature, the relay RY3 is deenergized by the control unit temperature circuit, opening the convection heating element.
   In the case of an oven temperature above 180°C being programmed, when the oven temperature reaches the selected preheat temperature, the relay RY3 is de-energized by the control unit temperature circuit, opening the convection heating element at first. And then after the thermistor temperature reaches the programmed temperature, the relay RY4 is de-energized opening the grill heating element. Because the oven temperature reaches the programmed temperature faster by grill heating element than the thermistor temperature.

NOTE: The relay RY4 is energized and the grill heating element is turned on in preheating condition only. It does not operate in convection cooking condition.

4. The oven will continue to function for 30 minutes, turning the convection heating elements on and off, as needed to maintain the selected preheat temperature. The oven will shut-down completely after 30 minutes.

CONVECTION COOKING CONDITION (Figure O-3)

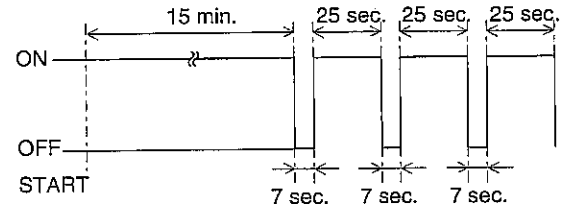
When the preheat temperature is reached, a beep signal will sound indicating that the holding temperature has been reached in the oven cavity. Open the door and place the food to be cooked in the oven. Program desired cooking time and convection temperature by touching the CONVECTION key. When the START key is touched, the following operations occur:

1. The numbers of the digital read-out start the count down to zero.
2. The oven lamp, cooling fan motor, turntable motor and convection motor are energized.
3. Relay RY3 is energized If the cavity temperature is lower than the selected temperature) and the main supply voltage is applied to the convection heating element to return to the selected cooking temperature.
4. Upon completion of the cooking time, the audible signal will sound, and oven lamp, turntable motor, cooling fan motor and convection motor are de-energized. At the end of convection cycle, if the cavity air temperature is above 104°C, the circuit to RY5 will be maintained (by the thermistor circuit) to continue operation of the cooling fan motor until temperature drops below 104°C, at that time the relay will be de-energized, turning off the fan motor .

GRILL COOKING CONDITION (Figure O-4)

In this condition the food is cooked by grill heating element energy. And after the initial period (approximately 10 minutes) the convection heater element is also activated. Program desired cooking time and grill mode by touching TIME keys and GRILL key. When the START key is touched, the following operations occur:

1. The numbers of the digital read-out start the count down to zero.
2. The oven lamp, cooling fan motor and turntable motor are energized.
3. The relay RY4 is energized and the grill heating element is energized.
4. If the cavity temperature is lower than 172°C, the relay RY6, relay RY3, convection motor and the convection heating element are energized. When the cavity temperature reaches 172°C, the relay RY6, relay RY3, convection motor and the convection heating element are de-energized.
5. Now, the food is grilled by the grill heating elements.
6. During the first 15 minutes of grill operation, the grill heating element is on continuously.
7. After 15 minutes, the grill heating element is turned on and off as shown in the figure.



DUAL COOKING CONDITION

The oven has two Dual cooking conditions. One is microwave and convection mode and the other is microwave and grill mode. In both modes, the relay RY2 operates intermittently within a 48 seconds time base as shown below.

Power level	ON time	OFF time
70%	36 sec.	12 sec.
50%	26 sec.	22 sec.
30%	16 sec.	32 sec.
10%	8 sec.	40 sec.

Power level 100% can not be programmed in Dual cooking condition.

MICROWAVE AND CONVECTION (Figure O-5)

Program desired cooking time and Dual cook mode by touching the TIME keys and DUAL COOK key once. When the START key is touched, the following operations occur:

1. The numbers of the digital read-out start the count down to zero.
2. The oven lamp, cooling fan motor, turntable motor and convection motor are energized.
3. Relay RY3 is energized (If the cavity temperature is lower than the selected temperature) and the main supply voltage is applied to the convection heating element.
4. Relay RY2 is energized and the microwave energy is generated by the magnetron.
5. Now, the food is cooked by the microwave and convection heating elements energy simultaneously.

MICROWAVE AND GRILL (Figure O-6)

Program desired cooking time and Dual cook mode by touching the TIME keys and DUAL COOK key twice. When the START key is touched, the following operations occur:

1. The numbers of the digital read-out start the count down to zero.
2. The oven lamp, cooling fan motor and turntable motor are energized.
3. Relay RY4 is energized and the main supply voltage is applied to the grill heating element.
4. Relay RY2 is energized and the microwave energy is generated by magnetron.
5. Now, the food is cooked by the microwave and grill heating elements energy simultaneously.

SNACK, POTATO AND INSTANT ACTION CONDITION

When the menu and quantity are input, the oven chooses cooking mode (Microwave, Convection, Grill or Dual) and sets cooking time automatically according to the pre-programmed information in IC-1 (LSI).

ROTISSERIE COOKING

When the ROTISSERIE COOKING key is touched before touching the START key, the following operations also occur:

1. Relay RY8 is energized and main supply voltage is supplied to the rotisserie motor.
2. In dual cooking (Microwave and Grill) condition with the rotisserie in operation, the microwave power level can be programmed 10% or 30% and the grill heating element operates intermitently (on for 26 seconds and off for 22 seconds).

FUNCTION OF IMPORTANT COMPONENTS

DOOR OPEN MECHANISM

The door can be opened by pushing the open button on the control panel. When the open button is pushed, the open lever pushes the latch head on the door upward, so now, the door can be opened.

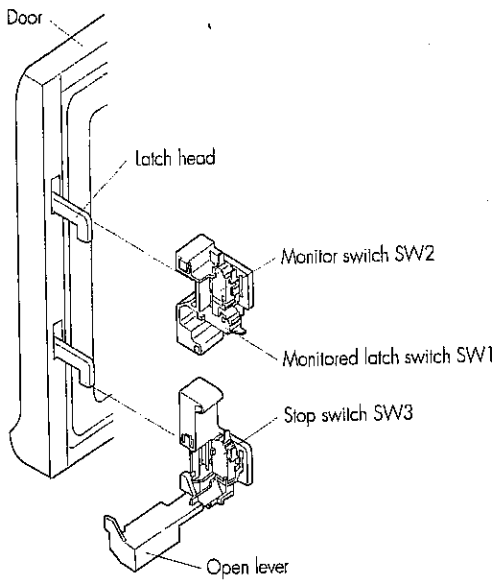


Figure D-1. Door Open Mechanism

MONITORED LATCH SWITCH SW1, AND STOP SWITCH SW3

1. When the oven door is closed, the contacts COM-NO of each switch must be closed.
2. When the oven door is opened, the contacts COM-NO of each switch must be opened.

MONITOR SWITCH SW2

The monitor switch is activated (the contacts opened) by the upper latch head on the door while the door is closed. The switch is intended to render the oven inoperative by means of blowing the fuse F2 (F8A) when the contacts of the monitored latch switch SW1 fail to open when the door is opened.

Function

1. When the door is opened, the contacts (COM-NC) of monitor switch SW2 close (to the ON condition) due to their being normally closed and contacts (COM-NO) open. At this time the stop switch SW3 is in the OFF condition (contacts open) due to their being normally open contact switches.
2. As the door goes to a closed position, the monitor switch SW2 contacts (COM-NC) are opened and contacts (COM-NO) closed and stop switch SW3 contacts COM-NO are closed and then the monitored latch switch closes.(On opening the door, each of these switches operate inversely.)
3. If the door is opened and the monitored latch switch SW1 contacts fail to open, the fuse F2 (F8A) blows immediately after closing of the monitor switch (COM-NC) contacts.

CAUTION: BEFORE REPLACING A BLOWN FUSE F2 F8A TEST THE MONITORED LATCH SWITCH, AND MONITOR SWITCH FOR PROPER OPERATION.
(REFER TO CHAPTER "TEST PROCEDURE").

FUSE F1 15A 250V

If the wire harness or electrical components are short-circuited, this fuse F1 15A 250V blows to prevent an electric shock or fire hazard.

FUSE F2 F8A 250V

1. If the wire harness or electrical components are short-circuited, this fuse blows to prevent an electric shock or fire hazard.
2. The fuse also blows when monitired latch switch SW1 remains closed with the oven door open and when the monitor switch SW2 contact (COM-NC) closes.

FUSE F3 F10A 250V

1. If the wire harness or electrical components are short-circuited, this fuse blows to prevent an electric shock or fire hazard.
2. The fuse also blows when the asymmetric rectifier, H.V. rectifier,.H.V. wire harness, H.V. capacitor, magnetron or secondary winding of high voltage transformer is shorted.

T/C TRANSFORMER

T/C transformer converts A.C. line voltage into low voltage to drive the control unit.

THERMAL CUT-OUT TC1 170°C (GRILL)

The thermal cut out protects the oven against overheat during grill cooking, convection cooking or dual (combination) cooking. If the temperature rises above 170°C because the fan motor is interrupted, the air inlet duct is blocked or the ventilation openings are obstructed, the thermal cut-out opens and switches off all the electrical parts.
The defective thermal cut-out must be replaced with a new one.

THERMAL CUT-OUT TC2 145°C (MG)

This thermal cut-out protects the magnetron against overheat. If the temperature goes up higher than 145°C because the fan motor is interrupted or the ventilation openings are blocked, the thermal cut-out TC2 will open and line voltage to the high voltage transformer T will cut off and operation of the magnetron MG will be stopped. The defective thermal cut-out must be replaced with a new one.

THERMAL CUT-OUT TC3 190°C (CONV.)

The thermal cut out protects the convection motor CM against overheat. If the temperature of the thermal cut-out TC3 rises above 190°C because the convection fan is interrupted, the ventilation openings are obstructed or the other abnormal matter occurs, the thermal cut-out opens and switches off the convection heating element. When the oven cools itself down to the operating temperature of 175°C, the contacts of the thermal cut-out will close again.

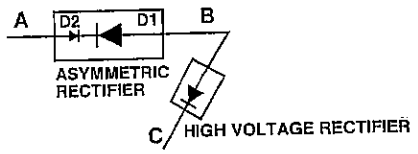
THERMAL CUT-OUT TC4 95°C (FAN MOTOR)

This thermal cut-out protects the fan motor against overheat. If its temperature goes up higher than 95°C because the fan motor is locked or the ventilation openings are blocked, the contacts of the thermal cut-out will open and switch off the oven. When the thermal cut-out cools itself down to 75°C, the contacts of the thermal cut-out will close again.

FUNCTION OF IMPORTANT COMPONENTS CONT...

ASYMMETRIC RECTIFIER

The asymmetric rectifier is solid state device that prevents current flow is both directions. And it prevents the temperature rise of the high voltage transformer by blowing the fuse F3 F10A when the high voltage rectifier is shorted.



The rated peak reverse voltage of D1 of the asymmetric rectifier is 6 KV The rated peak reverse voltage of D2 of the asymmetric rectifier is 1.7 KV. D1 and D2 of the asymmetric rectifier or high voltage rectifier are shorted when the each peak reverse voltage goes beyond the each rated peak reverse voltage. (The process of the blowing the fuse F3 F10A.)

1. The high voltage rectifier is shorted by some fault when microwave cooking or dual cooking.
2. The peak reverse voltage of D2 of the rectifier goes beyond the rated peak reverse voltage 1.7 KV in the voltage doubler circuit.
3. D2 of the rectifier is shorted.
4. The large electric currents flow through the high voltage winding of the high voltage transformer.
5. The large electric currents beyond 10A flow through the primary winding of the high voltage transformer.
6. The fuse F3 F10A blows by the large electric currents.
7. The power supplying to the high voltage transformer is cut off.

NOISE FILTER

The noise filter assembly prevents radio frequency interference that might flow back in the power circuit.

TURNTABLE MOTOR TTM

The turntable motor drives the roller stay to rotate the turntable.

FAN MOTOR FM

The fan motor drives a blade which draws external cool air. This cool air is directed through the air vanes surrounding the magnetron and cools the magnetron. This air is channeled through the oven cavity to remove steam and vapours given off from the heating foods. It is then exhausted through the exhausting air vents at the oven cavity.

CONVECTION MOTOR CM

The convection motor drives the convection fan and provide the heated air.

GRILL HEATING ELEMENT GH

The grill heating element is provided to brown the food and is located on the top of the oven cavity.

CONVECTION HEATING ELEMENT CH

The convection heating element is located at the rear of the oven cavity. It is intended to heat air driven by the convection fan. The heated air is kept in the oven and force-circulate and reheated by the convection heating element.

CONVECTION COOKING SYSTEM

This oven is designed with a hot air heating system where food is not directly heated up by the convection heating element, but is instead heated by forced circulation of the hot air produced by the convection heating element.

The air heated by the convection heating element is circulated through the convection passage provided on the outer casing of the oven cavity by means of the convection fan which is driven by the convection motor. It then enters the inside of the oven through the vent holes provided on the back side of the oven. Next, the hot air heats the food on the turntable and leaves the oven cavity through the vent in the oven cavity rear wall.

Without leaving the oven, this hot air is reheated by the convection heating element, passes through the convection passage and enters the inside of the oven cavity again, in a continuing cycle.

In this way, the hot air circulates inside the oven cavity to raise its temperature and, at the same time, comes into contact with the food being cooked.

When the temperature inside the oven cavity reaches the selected temperature, the convection heating element is de-energized. When the temperature inside the oven cavity drops below the selected temperature, the convection heating element is energized again. In this way, the inside of the oven cavity is maintained at approximately the selected temperature.

When the convection time reaches "0", the convection heating element is de-energized and the convection fan stops operating and the oven shuts off. At the high temperature (more than 104°C), the fan motor remains rotating. Automatically the fan motor will be shut down at low temperature (less than 104°C).

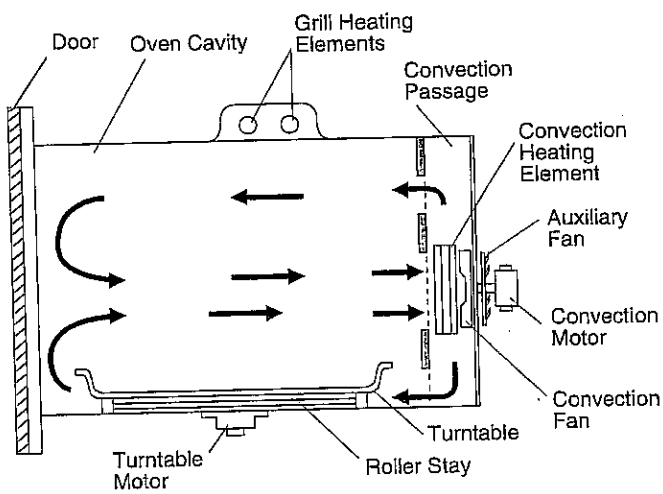


Figure D-2. Convection Cooking System

DAMPER OPEN-CLOSE MECHANISM

Damper position is set automatically by damper motor, damper switch, damper cam and damper shaft.

These components are operated by a signal that judges if microwave cooking or other cooking operation is selected by the CPU unit.

FUNCTION OF IMPORTANT COMPONENTS CONT...

Microwave Cooking:
Damper is in the open position. A portion of cooling air is channeled through the cavity to remove steam and vapors given off from the heating foods.
It is then exhausted at the top of the oven cavity into a condensation compartment.

Convection Cooking:
Damper is in the closed position, so that no hot air will be allowed to leak out the oven cavity.

Damper Operation

1. When power supply cord is plugged in:
1-1. When power supply cord is plugged in, a signal is sensed in the control unit, and operates shut-off relay (RY7).
1-2. Contacts of shut-off relay (RY7) close, the damper motor is energized, opening the damper door.
1-3. When the damper is moved to the open position by the damper cam, damper switch is closed (ON position).
1-4. The signal of damper switch is re-sensed in the control unit and shut-off relay (RY7) is turned off.
1-5. The A.C. line voltage A.C. to the damper motor is stopped and the motor turns off.
2. When oven is microwave cooking:
Damper is in the open position
3. When oven is convection cooking:
3-1 Damper motor is energized right after the oven is started.
3-2. When damper is in the closed position (damper switch is OFF), its signal is sensed by the control unit, and shut-off relay (RY7) is de-energized.
3-3. The damper is held in the closed position during the cooking operation
3-4. At the end of any cooking, when the fan motor stops, the relay (RY7) is energized and the damper is returned to the open position.

NOTE: If the damper door is not in the proper position, closed during convection, grill or dual, or open during microwave, the control unit will stop oven operation after 1 minute.

4. Operation of damper is shown below;

Damper operation

Cooking condition	Operation of Damper
Microwave	Open
Convection	Closed
Grill; during backed up with convection heating element	Closed
Grill; after convection heating element back-up has stopped.	Open
Dual (Microwave and Convection) when oven temperature above 220°C is programmed	Closed but open after 29 minutes
When oven temperature below 200°C is programmed	Closed
Dual (Microwave and Grill)	Open
Fire sensing condition	Closed

FIRE SENSING FEATURE

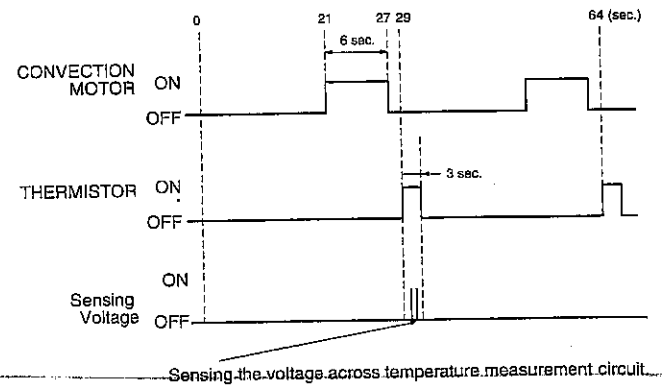
This model incorporates a sensing feature which will stop the oven's operation if there is a fire in the oven cavity during microwave cooking.
This is accomplished by the LSI repeatedly measuring the voltage across the temperature measurement circuit (thermistor) during it's 32-seconds time base, comparing the obtained voltage measurements. If the most recent voltage measured is 300mV greater than the previous voltage measured, the LSI judges it as a fire in the oven cavity and switches off the relays to the high voltage transformer, fan motor and convection motor. The LSI also stops counting down and closes the damper door so that no fresh air will enter the oven cavity. Please refer to the following section for a more detailed description.

Operation

Please refer to the timing diagrams below.

1. The thermistor operates within a 32-seconds time base and it is energized for three (3) seconds and off for 29 seconds. Two (2) seconds after the thermistor is energized, the voltage across the temperature measurement circuit is sampled by the LSI and twenty one (21) seconds after the thermistor is cut off the LSI turns on the cooling fan for six (6) seconds.
2. The above procedure is repeated. If the difference between the first voltage measured (in step 1) and the voltage measured when the procedure is repeated (step 2) is greater than 300mV the LSI makes the judgment that there is a fire in the oven cavity and will switch off the relays to the high voltage transformer, fan motor and convection motor. The LSI also stops counting down and closes the damper door so that no fresh air will enter the oven cavity.
3. Once the fire sensor feature has shut the unit down, the programmed cooking cycle may be resumed by pressing the "START" pad or the unit may be reset by pressing the "CLEAR" pad.

IMPORTANT:
During sensor cooking operation, the fire sensing operation sequence will not begin until the AH sensor has detected vapours and initiated a sensor cooking cycle. This is because the operation of the convection fan would interfere with the AH sensor's vapour detection.



ROTISSERIE COOKING SYSTEM

All the surfaces of the food will be able to be cooked without turning over, by rotating the food into which the skewer is inserted.

OPEN JUDGE BY THERMISTOR

1. If the temperature of the thermistor does not rise to more than 40°C after 4 minutes and 15 seconds from when the oven is started in convection, grill or dual cooking

(Microwave and Convection) mode, the oven is turned off.

2. When the thermistor or the wire harness to the thermistor is opened, the oven is turned off after 4 minutes and 15 seconds because this condition is same as above item 1.

ROTISSERIE MOTOR

The rotisserie motor is located on the right side wall of the oven cavity. The skewer is rotated by the rotisserie motor assembly.

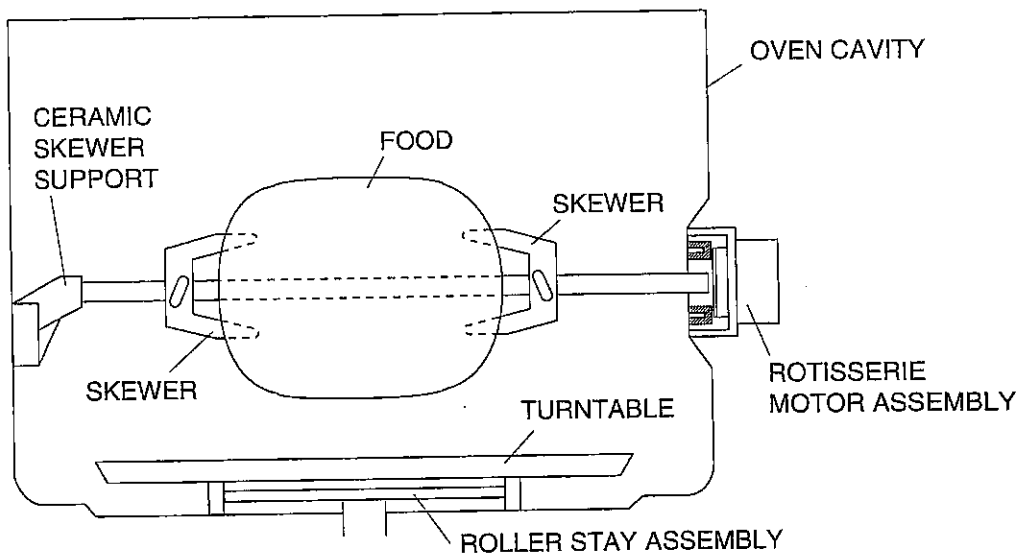


Figure D-3. Rotisserie Mechanism

WIRING / RE-WIRING

WARNING: Before carrying out any work carry out 3D checks

1) **D**isconnect the supply.
2) **D**oor opened, and wedged open.
3) **D**ischarge high voltage capacitor.

RE-WIRING

Ensure the following:

1. Wires must not touch:
   - a) High voltage parts.
     (Magnetron, high voltage transformer, high voltage capacitor and high voltage rectifier assembly)
   - b) Parts that become hot.
     (Heating elements, oven lamp, oven cavity magnetron and high voltage transformer)
   - c) Sharp edges.
     (Bottom plates, oven cavity, waveguide flange, chassis support and other metallic parts)
   - d) Movable parts.
     (Fan blade, any motor, switch, switch lever and open button)
2. Positive lock connectors are fitted correctly. Ensure the locking pin is located correctly.
3. Wires are connected correctly as per pictorial diagram.
4. No wire leads are trapped by the outer wrap.

TEST PROCEDURES

TEST PROCEDURE / PROBLEM	POSSIBLE CAUSE AND DEFECTIVE PARTS	A MAGNETRON	B HIGH VOLTAGE TRANSFORMER	C H.V. RECTIFIER ASSEMBLY	H.V. HARNESS	D HIGH VOLTAGE CAPACITOR	E MONITORED LATCH SWITCH	E DOOR SWITCH	E MONITOR SWITCH	E DAMPER SWITCH	F THERMAL CUT-OUT 170°C TC1	F THERMAL CUT-OUT 145°C TC2	F THERMAL CUT-OUT 190°C TC3
OFF CONDITION	Fuse F2 F8A blows when the door is opened.						○						
	Home fuse blows when power cord is plugged into wall outlet.												
	Fuse F1 15A blows when power cord is plugged into wall outlet.												
	"88:88" does not appear in display when power cord is plugged into wall outlet.										○		
	Display does not operate properly when STOP/CLEAR key is touched.							○					
	Oven lamp does not light when door is opened. (Display operates.)							○					
COOKING CONDITION (COMMON MODE)	Oven does not start when the START key is touched. (Display operates.)												
	Oven lamp does not light and turntable motor does not operate.												
	Fan motor does not operate. (Oven lamp lights.)												
	Convection fan motor does not operate. (Oven lamp lights.)						○						
	Turntable motor does not operate. (Oven lamp lights.)						○						
	Oven or any electrical parts (except fan motor) does not stop when cooking time is 0 or STOP/CLEAR key is touched.												
	Oven stops after about 4 minutes since START key is touched. (Except Microwave and Dual Cook modes)												
	Display operates properly but all electrical parts do not operate.												
	The oven stops 1 minute after starting.									○			
	Oven goes into cook cycle but shuts down before end of cooking cycle.										○		
	After cooking, the temperature of oven cavity is higher than 104°C but the fan motor does not operate.												
MICROWAVE COOKING CONDITION	Oven seems to be operating but little or no heat is produced in oven load. (Microwave power control is set at HIGH)	○	○	○	○	○	○		○			○	
	Oven does not seem to be operating properly during variable cooking condition. (Oven operates properly at HIGH)												
	Oven goes into cook cycle but shuts down before end of cooking cycle.											○	
CONVECTION COOKING CONDITION	Convection heating element does not heat.						○						○
	Oven seems to be operating when the temperature in the oven cavity is lower or higher than preset one.												
	Grill heating elements do not operate when convection temperature is set above 180°C.												
GRILL COOKING CONDITION	Grill heating element does not heat.						○						○
	Convection heating element does not stop when the temperature of oven cavity is higher than 172°C or it stop to heat when the temperature of oven cavity is still lower than 172°C												
DUAL COOKING CONDITION (COMMON MODE)	Oven goes into cook cycle but shuts down before end of cooking cycle.										○		
	Oven seems to be operating but little or no heat is produced in oven load. (Microwave power does not seem to be generated properly)	○	○	○	○	○	○		○			○	
DUAL COOKING CONDITION (MICRO./CONV.)	Oven seems to be operating but the temperature of oven cavity is lower or higher than preset one.												
	Convection heating element does not heat.						○						○
DUAL COOKING CONDITION (MICRO./GRILL)	Grill heating element does not heat.						○						○
SENSOR COOKING CONDITION (MICRO./GRILL)	Oven is in sensor cooking condition but AH sensor does not stop cooking cycle, or oven stop soon and display shows "ERROR".												

TEST PROCEDURES CONT...

F	THERMAL CUT-OUT 95°C TC4
G	TURNTABLE MOTOR
G	FAN MOTOR
G	DAMPER MOTOR
G	CONVECTION FAN MOTOR
K	FUSE F3 F10A
H	NOISE FILTER
J	FUSE F2 F8A
I	FUSE F1 15A
L	GRILL HEATING ELEMENT
L	CONVECTION HEATING ELEMENT
M	THERMISTOR
	POWER SUPPLY CORD
	SHORTED WIRE HARNESS
	OPENED WIRE HARNESS
	OVEN LAMP OR SOCKET
	T/C TRANSFORMER
N	TOUCH CONTROL PANEL
	BLOCKED VENTILATION OPENINGS
	WRONG OPERATION
	MIS-ADJUSTMENT OF SWITCHES
	HOME FUSE OR BREAKER
	NO POWER AT WALL OUTLET
	BLOCKED CONVECTION FAN
	BLOCKED COOLING FAN
P	RELAY (RY1, 2, 3, 4, 5,8, 8)
Q	FOIL PATTERN

PROCEDURE LETTER	COMPONENT TEST
A	MAGNETRON TEST

NEVER TOUCH ANY PART IN THE CIRCUIT WITH YOUR HAND OR AN INSULATED TOOL WHILE THE OVEN IS IN OPERATION.

CARRY OUT 3D CHECK.

Isolate the magnetron from high voltage circuit by removing all leads connected to filament terminal.

To test for an open circuit filament use an ohmmeter to make a continuity test between the magnetron filament terminals, the meter should show a reading of less than 1 ohm.

To test for short filament to anode condition, connect ohmmeter between one of the filament terminals and the case of the magnetron (ground). This test should be indicated an infinite resistance. If a low or zero resistance reading is obtained then the magnetron should be replaced.

MICROWAVE OUTPUT POWER (IEC-705-1988)

The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted). Microwave output power from the magnetron can be measured by way of IEC 705, i.e. it is measured by how much power the water load can absorb. To measure the microwave output power in the microwave oven, the relation of calorie and watt is used. When P(W) heating works for t(second), approximately P x t/4.187 calorie is generated. On the other hand, if the temperature of the water with V(ml) rises ΔT (°C) during this microwave heating period, the calorie of the water is V x ΔT.

The formula is as follows;

$P \times t / 4.187 = V \times \Delta T$ $P(W) = 4.187 \times V \times \Delta T / t$

Our condition for water load is as follows:

Room temperature.....around 20°C Power supply Voltage.....Rated voltage

Water load.....1000 g Initial temperature.....10±2°C Heating time.....42 sec.

$P=100 \times \Delta T$

Measuring condition:

1. Container
   The water container must be a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.
2. Temperature of the oven and vessel
   The oven and the empty vessel are at ambient temperature prior to the start the test.
3. Temperature of the water
   The initial temperature of the water is (10±2)°C.
4. Select the initial and final water temperature so that the maximum difference between the final water temperature and the ambient temperature is 5°C.
5. Select stirring devices and measuring instruments in order to minimize addition or removal of heat.
6. The graduation of the thermometer must be scaled by 0.1°C at minimum and be an accurate thermometer.
7. The water load must be (1000±5) g.
8. "t" is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included.

NOTE: The operation time of the microwave oven is "t + 3" sec. (3 sec. is magnetron filament heat-up time.) Therefore total heating time = 45 sec.

Measuring method:

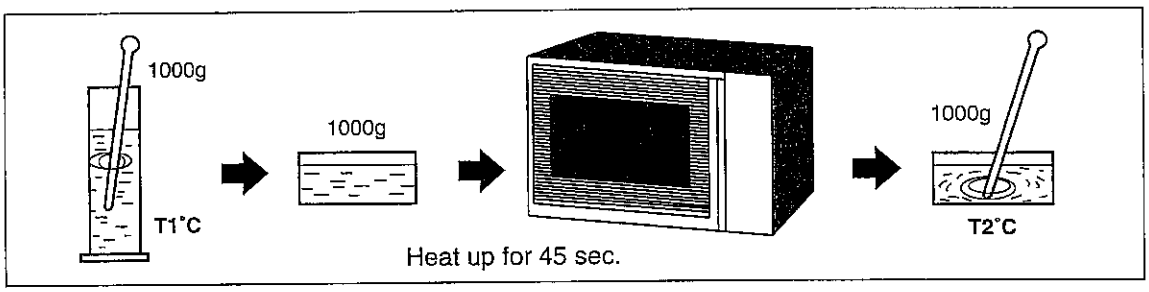
1. Measure the initial temperature of the water before the water is added to the vessel.
   (Example: The initial temperature T1 = 11°C)
2. Add the 1 litre water to the vessel.
3. Place the load on the centre of the shelf.
4. Operate the microwave oven at HIGH for the temperature of the water rises by a value Δ T of (10 ± 2) K.
5. Stir the water to equalize temperature throughout the vessel.
6. Measure the final water temperature. (Example: The final temperature T2 = 21°C)
7. Calculate the microwave power output P in watts from above formula.

PROCEDURE LETTER	COMPONENT TEST

Initial temperature	T1 = 11°C
Temperature after (42 + 3) = 45 sec.	T2 = 21°C
Temperature difference Cold-Warm	ΔT1 = 10°C
Measured output power	
The equation is "P = 100 x ΔT"	P = 100 x 10°C = 1000 Watts

JUDGEMENT: The measured output power should be at least ± 15 % of the rated output power.

CAUTION: 1°C CORRESPONDS TO 100 WATTS. REPEAT MEASUREMENT IF THE POWER IS INSUFFICIENT.



B **HIGH VOLTAGE TRANSFORMER TEST**

WARNING: High voltages and large currents are present at the secondary winding and filament winding of the high voltage transformer. It is very dangerous to work near this part when the oven is on. NEVER make any voltage measurements of the high-voltage circuits, including the magnetron filament.

CARRY OUT 3D CHECKS.

Disconnect the leads to the primary winding of the high voltage transformer. Disconnect the filament and secondary winding connections from the rest of the HV circuitry. Using an ohmmeter, set on a low range, it is possible to check the continuity of all three windings. The following readings should be obtained:

a. Primary winding	1.3 ohms approximately
b. Secondary winding	85 ohms approximately
c. Filament winding	less than 1 ohm

If the reading obtained are not stated as above, then the high voltage transformer is probably faulty and should be replaced.

CARRY OUT 4R CHECKS.

C **HIGH VOLTAGE RECTIFIER ASSEMBLY TEST**

HIGH VOLTAGE RECTIFIER TEST

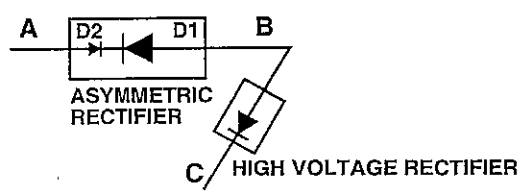
CARRY OUT 3D CHECKS.

Isolate the high voltage rectifier assembly from the HV circuit. The high voltage rectifier can be tested using an ohmmeter set to its highest range. Connect the ohmmeter across the terminal B+C of the high voltage rectifier and note the reading obtained. Reverse the meter leads and note this second reading. The normal resistance is infinite in one direction and more than 100 kΩ in the other direction.

CARRY OUT 4R CHECKS

ASYMMETRIC RECTIFIER TEST

CARRY OUT 3D CHECKS.



PROCEDURE LETTER	COMPONENT TEST

Isolate the high voltage rectifier assembly from the HV circuit. The asymmetric rectifier can be tested using an ohmmeter set to its highest range across the terminals A+B of the asymmetric rectifier and note the reading obtained. Reverse the meter leads and note this second reading. If an open circuit is indicated in both directions then the asymmetric rectifier is good. If the asymmetric rectifier is shorted in either direction, then the asymmetric rectifier is probably faulty and must be replaced with high voltage rectifier. When the asymmetric rectifier is defective, check whether magnetron, high voltage rectifier, high voltage wire or filament winding of the high voltage transformer is shorted.

CARRY OUT 4R CHECKS.

NOTE: FOR MEASUREMENT OF THE RESISTANCE OF THE RECTIFIER, THE BATTERIES OF THE MEASURING INSTRUMENT MUST HAVE A VOLTAGE AT LEAST 6 VOLTS, BECAUSE OTHERWISE AN INFINITE RESISTANCE MIGHT BE SHOWN IN BOTH DIRECTIONS.

D HIGH VOLTAGE CAPACITOR TEST

CARRY OUT 3D CHECKS.

A. Isolate the high voltage capacitor from the circuit.
B. Continuity check must be carried out with measuring instrument which is set to the highest resistance range.
C. A normal capacitor shows continuity for a short time (kick) and then a resistance of about 10MΩ after it has been charged.
D. A short-circuited capacitor shows continuity all the time.
E. An open capacitor constantly shows a resistance about 10 MΩ because of its internal 10MΩ resistance.
F. When the internal wire is opened in the high voltage capacitor shows an infinite resistance.
G. The resistance across all the terminals and the chassis must be infinite when the capacitor is normal.

If incorrect readings are obtained, the high voltage capacitor must be replaced.

CARRY OUT 4R CHECKS.

E SWITCH TEST

CARRY OUT 3D CHECKS.

Isolate the switch to be tested and using an ohmmeter check between the terminals as described in the following table.

Table: Terminal Connection of Switch

Plunger Operation	COM to NO	COM to NC
Released	O.C.	S.C.
Depressed	S.C.	O.C.

COM; Common terminal, NO; Normally open terminal NC; Normally closed terminal
S.C.; Short circuit, O.C.; Open circuit
If incorrect readings are obtained, make the necessary switch adjustment or replace the switch.

CARRY OUT 4R CHECKS.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

F **THERMAL CUT-OUT TEST**

CARRY OUT 3D CHECKS.
Disconnect the leads from the terminals of the thermal cut-out. Then using an ohmmeter, make a continuity test across the two terminals as described in the below.

CARRY OUT 4R CHECKS.

Table: Thermal Cut-out Test

Parts Name	Temperature of condition "ON" (closed circuit).	Temperature of "OFF" condition (open circuit).	Indication of ohmmeter (When room temperature is approx. 20°C.)
Thermal cut-out 170°C TC1	This is not resetable type.	Above 170°C	Closed circuit
Thermal cut-out 145°C TC2	This is not resetable type.	Above 145°C	Closed circuit
Thermal cut-out 190°C TC3	Below 175°C	Above 190°C	Closed circuit.
Thermal cut-out 95°C TC4	Below 75°C	Above 95°C	Closed circuit.

If incorrect readings are obtained, replace the thermal cut-out.
An open circuit thermal cut-out (GRILL) TC1 indicates that the oven cavity has overheated, this may be due to no load operation.
An open circuit thermal cut-out (MG) TC2 indicates that the magnetron has overheated, this may be due to resistricted ventilation, cooling fan failure.
An open circuit thermal cut-out (CONV.) TC3 indicates that the convection fan motor winding has overheated, this may be due to resisted ventilation or locked cooling fan or locked convection fan motor.
An open circuit thermal cut-out (FAN) TC4 indicates that the fan motor winding has overheated, this may be due to blocked ventilation or locked cooling.

G **MOTOR WINDING TEST**

CARRY OUT 3D CHECKS.

Disconnect the leads from the motor. Using an ohmmeter, check the resistance between the two terminals as described in the table below.

Table: Resistance of Motor

Motors	Resistance
Fan motor	Approximately 205 Ω
Turntable motor	Approximately 15.5 kΩ
Convection fan motor	Approximately 180 Ω
Damper motor	Approximately 16 kΩ

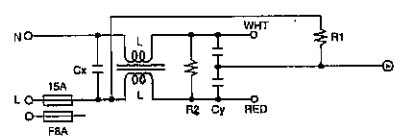
If incorrect readings are obtained, replace the motor.

CARRY OUT 4R CHECKS.

H **NOISE FILTER TEST**

CARRY OUT 3D CHECKS.

Disconnect the leads from the terminals of noise filter. Using an ohmmeter, check between the terminals as described in the following table.



R1: 10 MΩ ± 20%
R2 : 680 kΩ ± 20%

L (min)	Cx ± 20%	Cy ± 20%
1.0mH	0.22μF	4700pF

MEASURING POINTS	INDICATION OF OHMMETER
Between N and L	Approx. 680 kΩ
Between terminal N and WHITE	Short circuit
Between terminal L and RED	Short circuit

If incorrect readings are absorbed, replace the noise filter unit.

CARRY OUT 4R CHECKS.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
I	**FUSE F1 15A** CARRY OUT 3D CHECKS. If the fuse F1 15A is blown, there is a shorts or grounds in electrical parts or wire harness. Check them and replace the defective parts or repair the wire harness. CARRY OUT 4R CHECKS. **CAUTION: Only replace fuse with the correct value replacement.**
J	**BLOWN FUSE F2 F8A** CARRY OUT 3D CHECKS. 1. If the fuse F2 F8A is blown when the door is opened, check the monitored latch switch, and monitor switch. 2. If the fuse F2 F8A is blown by incorrect door switching replace the defective switch(es) and the fuse F2 F8A. 3. If the fuse F2 F8A is blown, there could be a shorts or grounds in electrical parts or wire harness. Check them and replace the defective parts or repair the wire harness. CARRY OUT 4R CHECKS. **CAUTION: Only replace fuse F2 F8A with the correct value replacement.**
K	**BLOWN FUSE F3 F10A** CARRY OUT 3D CHECKS. 1. If the fuse F3 F10A is blown, there could be shorts or grounds in electrical parts or wire harness. Check them and replace the defective parts or repair the wire harness. 2. If the fuse F3 F10A is blown, there could be shorts in the asymmetric rectifier or there is a ground in wire harness. A short in the asymmetric rectifier may be occurred due to short or ground in H.V. rectifier, magnetron, high voltage transformer or H.V. wire. Check them and replace the defective parts or repair the wire harness. CARRY OUT 4R CHECKS. **CAUTION: Only replace fuse F3 F10A with the correct value replacement.**
L	**CONVECTION HEATING ELEMENT AND GRILL HEATING ELEMENT TEST** CARRY OUT 3D CHECKS. Before carrying out the following tests make sure the heating element is completely cool. 1. Resistance of heating element. Disconnect the wire leads to the heating element to be tested. Using ohmmeter with low resistance range. Check the resistance across the terminals of the heating element as described in the following table. Table: Resistance of heating element Parts name / Resistance Convection heating element / Approximately 39 Ω Grill heating element / Approximately 22 Ω x 2 = 44 Ω 2. Insulation resistance. Disconnect the wire leads to the heating element to be tested. Check the insulation resistance between the element terminal and cavity using a 500V - 100MΩ insulation tester. The insulation resistance should be more than 10MΩ in the cold start. If the results of above test 1 and/or 2 are out of above specifications, the heating element is probably faulty and should be replaced. CARRY OUT 4R CHECKS.
M	**THERMOSTAT TEST** CARRY OUT 3D CHECKS. Disconnect connector C from CPU unit. Measure the resistance of thermistor with an ohmmeter. Connect the ohmmeter leads to Pin No's C1 and C3 of the thermistor harness.

PROCEDURE LETTER	COMPONENT TEST

Room Temperature	Resistance
20°C - 30°C	Approximately 350 kΩ - 155 kΩ

If the meter does not indicate above resistance, replace the thermistor.

CARRY OUT 4R CHECKS.

N **TOUCH CONTROL PANEL ASSEMBLY TEST**

The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance can not be performed with only a voltmeter and ohmmeter.
In this service manual, the touch control panel assembly is divided into two units, Control Unit and Key Unit, and troubleshooting by unit replacement is described according to the symptoms indicated.

1. Key Unit Note : Check key unit ribbon connection before replacement.
   The following symptoms indicate a defective key unit. Replace the key unit.
   a) When touching the pads, a certain pad produces no signal at all.
   b) When touching a number pad, two figures or more are displayed.
   c) When touching the pads, sometimes a pad produces no signal.
2. Control Panel
   The following symptoms indicate a defective control unit. Before replacing the control unit. perform the key unit test (Procedure O) to determine if control unit is faulty.

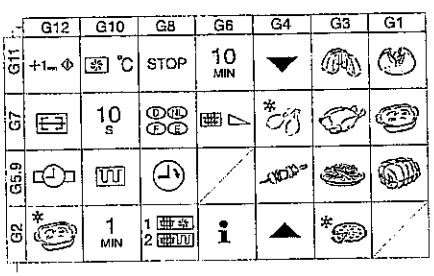
2-1 In connection with pads
   a) When touching the pads, a certain group of pads do not produce a signal.
   b) When touching the pads, no pads produce a signal.

2-2 In connection with indicators
   a) At a certain digit, all or some segments do not light up.
   b) At a certain digit, brightness is low.
   c) Only one indicator does not light up.
   d) The corresponding segments of all digits do not light up; or they continue to light up.
   e) Wrong figure appears.
   f) A certain group of indicators do not light up.
   g) The figure of all digits flicker.

2-3 Other possible troubles caused by defective control unit.
   a) Buzzer does not sound or continues to sound.
   b) Clock does not operate properly.
   c) Cooking is not possible.
   d) Proper temperature measurement is not obtained.

O **KEY UNIT TEST**

If the display fails to clear when the STOP pad is depressed, first verify the flat ribbon cable is marking good contact, verify that the door sensing switch (stop switch) operates properly; that is the contacts are closed when the door is closed and open when the door is open. If the door sensing switch (stop switch) is good, disconnecct the flat ribbon cable that connects the key unit to the control unit and make sure the door sensing switch is closed (either close the door or short the door sensing switch connecter). Use the Key unit matrix indicated on the control panel schematic and place a jumper wire between the pins that correspond to the STOP pad marking momentary contact. If the control unit responds by clearing with a beep the key unit is faulty and must be replaced. If the control unit does not respond, it is a faulty and must be replaced. If a specific pad does not respond, the above method may be used (after clearing the control unit) to determine if the control unit or key pad is at fault.



CARRY OUT 4R CHECKS

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

P **RELAY TEST**

CARRY OUT 3D CHECKS.

Remove the outer case and check voltage between Pin Nos. 1 and 3 of the 4 pin connector (E) on the control unit with an A.C. voltmeter.
The meter should indicate 230 volts, if not check oven circuit.

Relay Test
Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation, convection cooking operation or grill operation.
DC. voltage indicated..... Defective relay.
DC. voltage not indicated..... Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 18.0V D.C.	Oven lamp / Turntable motor
RY2	Approx. 18.0V D.C.	High voltage transformer
RY3	Approx. 18.0V D.C.	Convection heating element
RY4	Approx. 18.0V D.C.	Grill heating element
RY5	Approx. 24.0V D.C.	Fan motor
RY6	Approx. 24.0V D.C.	Convection fan motor
RY7	Approx. 24.0V D.C.	Damper motor
RY8	Approx. 24.0V D.C.	Rotisserie motor

CARRY OUT 4R CHECKS.

Q) **PROCEDURES TO BE TAKEN WHEN THE FOIL PATTERN ON THE PRINTED WIRING BOARD (PWB) IS OPEN.**

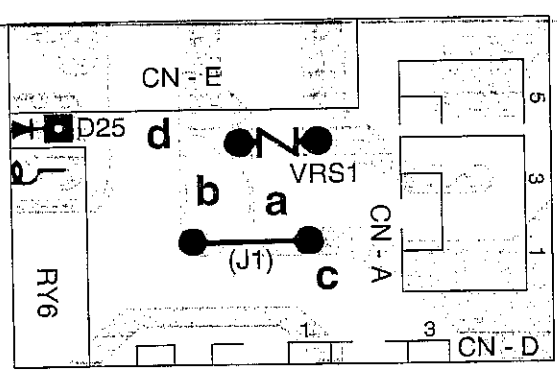
To protect the electronic circuits, this model is provided with a fine foil pattern added to the input circuit on the PWB, this foil pattern acts as a fuse. If the foil pattern is open, follow the troubleshooting guide given below for repair.
Problem: POWER ON, indicator does not light up.

CARRY OUT 3D CHECKS.

STEPS	OCCURANCE	CAUSE OR CORRECTION
1	The rated AC voltage is not present at Power terminal of CPU connector (CN-A).	Check supply voltage and oven power cord.
2	The rated AC voltage is present at primary side of low voltage transformer.	Low voltage transformer or secondary circuit defective. Check and repair.
3	Only pattern at "a" is broken.	*Insert jumper wire J1 and solder. (CARRY OUT 3D CHECKS BEFORE REPAIR)
4	Pattern at "a" and "b" are broken.	*Insert the coil RCILF2003YAZZ between "c" and "d".

(CARRY OUT 3D CHECKS BEFORE REPAIR)
NOTE: *At the time of these repairs, make a visual inspection of the varistor for burning damage and examine the transformer with tester for the presence of layer short circuit (check primary coil resistance).
If any abnormal condition is detected, replace the defective parts.

CARRY OUT 4R CHECKS.



OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following units as shown in the touch control panel circuit.

(1) Key Unit
(2) Control Unit

The principal functions of these units and signals communicated among them are explained below.

Key Unit
The key unit is composed of a matrix, signals generated in the LSI are sent to the key unit from P11 - P17.
When a key pad is touched, a signal is completed through the key unit and passed back to the LSI through P20 - P23 to perform the function that was requested.

Control Unit
Control unit consists of LSI, power source circuit, synchronizing signal circuit, ACL circuit, buzzer circuit, temperature measurement circuit, relay circuit, indicator circuit and back light circuit.

1) **LSI**
This LSI controls the key strobe signal, relay driving signal for oven function and indicator signal.

2) **Power Source Circuit**
This circuit generates voltage necessary in the control unit.

Symbol	Voltage	Application
VC	-5.2V	LSI(IC1)

3) **Synchronizing Signal Circuit**
The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit. It accompanies a very small error because it works on commercial frequency.

4) **ACL**
A circuit to generate a signals which resets the LSI to the initial state when power is supplied.

5) **Buzzer Circuit**
The buzzer is responsive to signals from the LSI to emit audible sounds (key touch sound and completion sound).

6) **Door Sensing Switch (Stop Switch)**
A switch to "tell" the LSI if the door is open or closed.

7) **Relay Circuit**
To drive the magnetron, heating element, convection fan motor, fan motor, turntable motor and light the oven lamp.

8) **Back Light Circuit**
A circuit to drive the back light (Light emitting diodes LD1 - LD5).

9) **Indicator Circuit**
This circuit consists of 7-digits, 30-segments and 4-common electrodes using a Liquid Crystal Display.

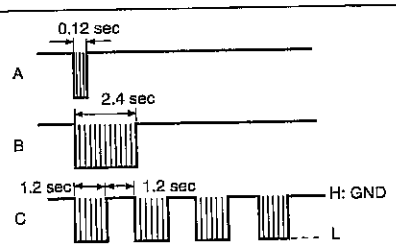
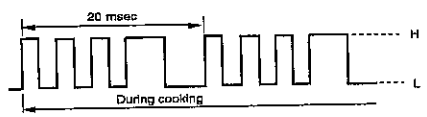
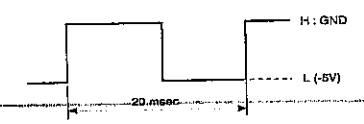
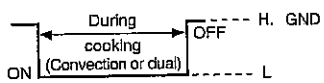
10) **Temperature Measurement Circuit**
The temperature in the oven cavity is sensed by the thermistor. The variation of resistance according to sensed temperature is detected by the temperature measurement circuit and the result applies to LSI. The result of detecting is given to LSI controlling the relay and display.

11) **Damper Switch**
A switch to tell the LSI if the damper is open or close.

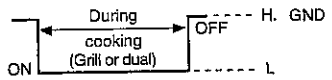
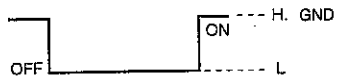
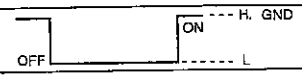
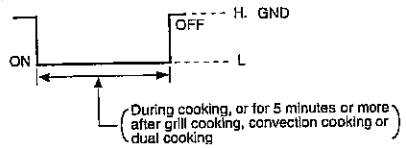
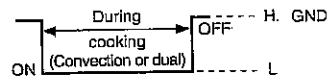
TOUCH CONTROL / DESCRIPTION OF LSI

LSI(IZA804DR)

The I/O signal of the LSI(IZA804DR) are detailed in the following table.

Pin No.	Signal	I/O	Description
1	C1	IN	Terminal not used.
2	VL1	IN	**Power source voltage input terminal.** Standard voltage for LCD.
3-6	AN7-AN4	IN	**Heating constant compensation terminal.**
7	AN3	IN	**Temperature measurement input: OVEN THERMISTOR.** By inputting DC voltage corresponding to the temperature detected by the thermistor, this input is converted into temperature by the A/D converter built into the LSI.
8	AN2	IN	**Input signal which communicates the door open/close information to LSI.** Door closed; "H" level signal. Door opened; "L" level signal.
9-10	AN1-AN0	IN	Terminal not used.
11	P57	IN	**Input signal which communicates the door open/close information to LSI.** Damper opened; "H" level signal (0V:GND). Damper closed; "L" level signal (-5V:VC).
12	P56	OUT	**Signal to sound buzzer.** A: key touch sound. B: Completion sound. C: When the temperature of the oven cavity reaches the preset temperature in the preheating mode, or when the preheating hold time (30 minutes) is elapsed. 
13	P55		Terminal not used.
14-18	P54-P50	OUT	Terminal not used.
19	P47	OUT	**Oven lamp and turntable motor driving signal(Square Waveform : 50Hz).** To turn on and off shut-off relay (RY1). The square waveform voltage is delivered to the relay (RY1) driving circuit and relays (RY2,RY3,RY4) control circuit. 
20	P46	IN/OUT	Terminal not used.
21	P45	OUT	**Back light driving signal.** To change the brightness of the back light (Light emitting diodes LD1 - LD5). The square waveform voltage is delivered to the back light driving circuit.
22	P44	OUT	**Timing signal output terminal for temperature measurement (oven).** "H" level (GND) : Thermistor OPEN timing. "L" level (-5V) : Temperature measuring timing.
23	INT1	IN	Terminal not used.
24	INT0	IN	**Signal to synchronized LSI with commercial power source frequency(50Hz).** This is basic timing for time processing of LSI. 
25	P41	IN	Terminal not used.
26	P40	OUT	**Signal similar to P44.** Timing signal output terminal for temperature measurement.
27	P77	OUT	**Convection heating element driving signal.** To turn on and off the heating element relay (RY3). "L" level during convection cooking or dual cooking, "H" level otherwise. 

TOUCH CONTROL / DESCRIPTION OF LSI

<table>
<tr><th>Pin No.</th><th>Signal</th><th>I/O</th><th>Description</th></tr>
<tr><td>28</td><td>P76</td><td>OUT</td><td><u>Grill heating element driving signal.</u>
To turn on and off the bottom element relay (RY4). "L" level during grill cooking or dual cooking, "H" level otherwise.
 
</td></tr>
<tr><td>29</td><td>P75</td><td>OUT</td><td><u>Magnetron high-voltage circuit driving signal.</u>
To turn on and off the cook relay (RY2). In 100% POWER operation, the signals hold "L" level during microwave cooking and "H" level while not cooking. In other cooking modes (70%, 50%, 30%, 10%) the signal turns to "H" level and "L" level in repetition according to the power level.
ON/OFF time ratio in Micro cooking (a. 32second time base)
<table>
<tr><th>MICRO COOK</th><th>ON</th><th>OFF</th></tr>
<tr><td>100%</td><td>32sec.</td><td>0sec.</td></tr>
<tr><td>70%</td><td>24sec.</td><td>8sec.</td></tr>
<tr><td>50%</td><td>18sec.</td><td>14sec.</td></tr>
<tr><td>30%</td><td>12sec.</td><td>20sec.</td></tr>
<tr><td>10%</td><td>6sec.</td><td>26sec.</td></tr>
</table>
ON/OFF time ratio in Micro cooking (a. 48second time base)
<table>
<tr><th>MICRO COOK</th><th>ON</th><th>OFF</th></tr>
<tr><td>100%</td><td>48sec.</td><td>0sec.</td></tr>
<tr><td>70%</td><td>36sec.</td><td>12sec.</td></tr>
<tr><td>50%</td><td>26sec.</td><td>22sec.</td></tr>
<tr><td>30%</td><td>16sec.</td><td>32sec.</td></tr>
<tr><td>10%</td><td>8sec.</td><td>40sec.</td></tr>
</table></td></tr>
<tr><td>30</td><td>P74</td><td>OUT</td><td><u>Rotisserie motor relay driving signal.</u>
To turn on and off shut-off relay (RY8). "H" level during Rotisserie cooking; "L" level otherwise.
 
</td></tr>
<tr><td>31</td><td>P73</td><td>OUT</td><td><u>Damper motor relay driving signal.</u>
To turn on and off shut-off relay (RY7).
 
</td></tr>
<tr><td>32</td><td>P72</td><td>OUT</td><td><u>Fan motor driving signal.</u>
To turn on and off the fan motor relay RY5. "L" level during cooking, or for 5 minutes after grill cooking or dual cooking. "H" level otherwise.
 
</td></tr>
<tr><td>33</td><td>P71</td><td>IN</td><td><u>Convection motor driving signal.</u>
To turn on and off shut-off relay (RY6). "L" level during CONVECTION; "H" level otherwise.
 
</td></tr>
<tr><td>34</td><td>P70</td><td>IN</td><td>Connected to VC.</td></tr>
<tr><td>35</td><td>RESET</td><td>IN</td><td><u>Auto clear terminal.</u>
Signal is input to reset the LSI to the initial state when power is applied. Temporarily set to "L" level the moment power is applied, at this time the LSI is reset. Thereafter set at "H" level.</td></tr>
<tr><td>36</td><td>XCIN</td><td>IN</td><td>Terminal not used.</td></tr>
<tr><td>37</td><td>XCOUT</td><td>OUT</td><td>Terminal not used.</td></tr>
<tr><td>38</td><td>XIN</td><td>IN</td><td><u>Internal clock oscillation frequency input setting.</u>
The internal clock frequency is set by inserting the ceramic filter oscillation circuit with respect to XIN terminal.</td></tr>
<tr><td>39</td><td>XOUT</td><td>OUT</td><td><u>Internal clock oscillation frequency control output.</u>
Output to control oscillation input of XOUT.</td></tr>
<tr><td>40</td><td>VSS</td><td>IN</td><td><u>Power source voltage: -5V.</u>
VC voltage of power source circuit input.</td></tr>
<tr><td>41-44</td><td>P27-P24</td><td>IN/OUT</td><td>Terminal not used.</td></tr>
<tr><td>45</td><td>P23</td><td>IN</td><td><u>Signal coming from touch key.</u>
When any one of G2 line keys on key matrix is touched, a corresponding signal from P11, P12, P13, P14, P15, P16 and P17 will be input into P23. When no key is touched, the signal is held at "L" level.</td></tr>
<tr><td>46</td><td>P22</td><td>IN</td><td><u>Signal similar to P23.</u>
When any one of G5 and G9 line keys on key matrix is touched, a corresponding signal will be input into P22.</td></tr>
<tr><td>47</td><td>P21</td><td>IN</td><td><u>Signal similar to P23.</u>
When any one of G7 line keys on key matrix is touched, a corresponding signal will be input into P21.</td></tr>
<tr><td>48</td><td>P20</td><td>IN</td><td><u>Signal similar to P23.</u>
When any one of G11 line keys on key matrix is touched, a corresponding signal will be input into P20.</td></tr>
</table>

Pin No.	Signal	I/O	Description
49	P17	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of G12 line keys on matrix is touched.
50	P16	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of G10 line keys on matrix is touched.
51	P15	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of G8 line keys on matrix is touched.
52	P14	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of G6 line keys on matrix is touched.
53	P13	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of G4 line keys on matrix is touched.
54	P12	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of G3 line keys on matrix is touched.
55	P11	OUT	**Key strobe signal.** Signal applied to touch-key section. A pulse signal is input to P20 - P23 terminal while one of G1 line keys on matrix is touched.
56	P10	OUT	Terminal not used.
57-60	SEG33-SEG30		Terminal not used.
61-90	SEG29-SEG0	OUT	**Segment data signal.** Connected to LCD. The relation between signals are as follows: LSI signal (Pin No.) LCD (Pin No.) LSI signal (Pin No.) LCD (Pin No.) SEG 0 (90) ..... 1 SEG15 (75) ..... 29 SEG 1 (89) ..... 2 SEG16 (74) ..... 28 SEG 2 (88) ..... 3 SEG17 (73) ..... 27 SEG 3 (87) ..... 4 SEG18 (72) ..... 26 SEG 4 (86) ..... 5 SEG19 (71) ..... 25 SEG 5 (85) ..... 6 SEG20 (70) ..... 24 SEG 6 (84) ..... 7 SEG21 (69) ..... 11 SEG 7 (83) ..... 8 SEG22 (68) ..... 23 SEG 8 (82) ..... 9 SEG23 (67) ..... 22 SEG 9 (81) ..... 10 SEG24 (66) ..... 12 SEG10 (80) ..... 34 SEG25 (65) ..... 13 SEG11 (79) ..... 33 SEG26 (64) ..... 14 SEG12 (78) ..... 32 SEG27 (63) ..... 15 SEG13 (77) ..... 31 SEG28 (62) ..... 16 SEG14 (76) 30 SEG29 (61) 17
91	VCC	IN	Connected to GND.
92	VREF	IN	Connected to GND.
93	AVSS	IN	Connected to VC.
94	COM3	OUT	**Common data signal: COM3.** Connected to LCD (Pin No. 21).
95	COM2	OUT	**Common data signal: COM2.** Connected to LCD (Pin No. 20).
96	COM1	OUT	**Common data signal: COM1.** Connected to LCD (Pin No. 19).
97	COM0	OUT	**Common data signal: COM0.** Connected to LCD (Pin No. 18).
98-99	VL3-VL2	IN	**Power source voltage input terminal.** Standard voltage for LCD.
100	C2	IN	Terminal not used.

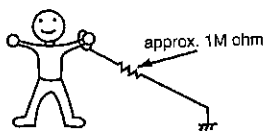
SERVICING

1. Precautions for Handling Electronic Components

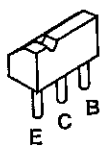
This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc., and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

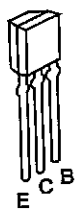
1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap PW boards containing them in aluminium foil.
2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



2. Shapes of Electronic Components



Transistor
2SB1238



Transistor
DTA123ES
KRA101M
KRC243M

3. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so.

To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

(1) Servicing the touch control panel with power supply of the oven :

CAUTION:
THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING AND PRESENTS A HAZARD .

Therefore, when checking the performance of the touch control panel, put the outer cabinet on the oven to avoid touching the high voltage transformer, or unplug the primary terminal (connector) of the high voltage transformer to turn it off; the end of such connector must be insulated with an insulating tape. After servicing, be sure to replace the leads to their original locations.

A. On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated. For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

B. On some models, the power supply cord between the touch control panel and the oven proper is so long enough that they may be separated from each other. For those models, therefore, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which brings about an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if the dummy resistor(s) with resistance equal to that of the controls are used.

(2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which brings about an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel; it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

4. Servicing Tools

Tools required to service the touch control panel assembly.

1) Soldering iron: 30W
   (It is recommended to use a soldering iron with a grounding terminal.)
2) Oscilloscope: Single beam, frequency range: DC - 10MHz type or more advanced model.
3) Others: Hand tools

5. Other Precautions

1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
2) Connect the connector of the key unit to the control unit being sure that the lead wires are not twisted.
3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
5) Be sure to use specified components where high precision is required.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

WARNING: Avoid possible exposure to microwave energy. Please follow the instructions below before operating the oven.

1. Disconnect oven from power supply.
2. Make sure that a definite" click" can be heard when the microwave oven door is unlatched. (Hold the door in a closed position with one hand, then push the door open button with the other, this causes the latch leads to rise, it is then possible to hear a "click' as the door switches operate.)
3. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.).

Carry out any remedial work that is necessary before operating the oven.
Do not operate the oven if any of the following conditions exist;

1. Door does not close firmly.
2. Door hinge, support or latch hook is damaged.
3. The door gasket or seal or damaged.
4. The door is bent or warped.
5. There are defective parts in the door interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Do not operate the oven:
1. Without the RF gasket (Magnetron).
2. If the wave guide or oven cavity are not intact.
3. If the door is not closed.
4. If the outer case (cabinet) is not fitted.

Please refer to 'OVEN AND CABINET PARTS, CONTROL PANEL PARTS, DOOR PARTS', when carrying out any of the following removal procedures:

OUTER CASE REMOVAL

To remove the outer case proceed as follows.
1. Disconnect oven from power supply.
2. Open the oven door and wedge it open.
3. Remove the screws from rear and along the side edge of case.
4. Slide the entire case back about 3cm to free it from retaining clips on the cavity face plate.
5. Lift the entire case from the oven.
6. Discharge the H.V. capacitor before carrying out any further work.
7. Do not operate the oven with the outer case removed.

N.B.; Step 1, 2 and 6 form the basis of the 3D checks.

CAUTION: DISCHARGE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENT OR WIRING.

HIGH VOLTAGE COMPONENTS REMOVAL (HIGH VOLTAGE CAPACITOR AND HIGH VOLTAGE RECTIFIER ASSEMBLY)

To remove the components, proceed as follows.
1. CARRY OUT 3D CHECKS
2. Disconnect the brown wire and blue wire of the power supply cord from the noise filter.
3. Disconnect all the leads from the high voltage capacitor.
4. Remove one (1) screw holding capacitor holder to the back plate.
5. Release the capacitor holder with the high voltage capacitor from back plate.
6. Remove one (1) screw holding earth side terminal of high voltage rectifier assembly.
7. Disconnect the terminal of high voltage rectifier assembly from the high voltage capacitor.
8. Now high voltage rectifier assembly is free.
9. Remove the capacitor from the capacitor holder.
10. Now high voltage capacitor should be free.

CAUTION: WHEN REPLACING HIGH VOLTAGE RECTIFIER ASSEMBLY, ENSURE THAT THE CATHODE (EARTH) CONNECTION IS SECURELY FIXED TO THE CAPACITOR HOLDER WITH AN EARTHING SCREW.

HIGH VOLTAGE TRANSFORMER REMOVAL

1. CARRY OUT 3D CHECKS
2. Disconnect the main wire harness from the high voltage transformer.
3. Disconnect the filament leads of high voltage transformer from high voltage capacitor and the magnetron.
4. Disconnect the H.V. wire A from the magnetron and high voltage capacitor.
5. Remove the tube inserted to the H.V. wire A and the filament leads.
6. Disconnect the H.V. wire B from the high voltage transformer.
7. Remove the two (2) screws and one (1) washer holding the transformer to base plate.
8. Remove the transformer from the base plate.
9. Now the high voltage transformer is free.

CONTROL PANEL REMOVAL

1. CARRY OUT 3D CHECKS
2. Disconnect the connectors from the control unit.
3. Remove the two (2) screws holding the control panel to the oven cavity and remove the control panel.
4. Lift up the control panel assembly and pull it forward. Now the control panel assembly is free.

NOTE:
1. Before attaching a new key unit, remove remaining

adhesive on the control panel frame surfaces completely with alcohol and so on.
2. When attaching the key unit to the control panel frame, adjust the upper edge and right edge of the key unit to the correct position of control panel frame.
3. Stick the key unit firmly to the control panel frame by rubbing with soft cloth so as not to scratch.

MAGNETRON REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the H.V. wire A and filament lead of the transformer from the magnetron.
3. Remove the one (1) screw holding the chassis support to the magnetron.
4. Remove the one (1) screw holding the magnetron guide to the magnetron.
5. Remove the magnetron guide from the magnetron.
6. Carefully remove four (4) screws holding magnetron to waveguide.
7. Remove the magnetron from the waveguide with care so the magnetron antenna is not hit by any metal object around the antenna.
8. Now, the magnetron is free.

CAUTION: WHEN REPLACING THE MAGNETRON, BE SURE THE R.F. GASKET IS IN PLACE AND THE MAGNETRON MOUNTING SCREWS ARE TIGHTENED SECURELY.

FAN MOTOR REPLACEMENT

REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the wire leads from the fan motor and the thermal cut-out (FAN).
3. Remove the one (1) screw holding the damper mounting angle to the chassis support.
4. Remove the four (4) screws holding the chassis support to the oven cavity, fan duct, magnetron and back plate.
5. Release the chassis support from the oven.
6. Remove the two (2) screws holding the fan duct to the waveguide.
7. Remove the fan duct from the oven.
8. Remove the fan blade assembly from the fan motor shaft according to the following procedure.
   1) Hold the edge of the rotor of the fan motor by using a pair of groove joint pliers.

CAUTION:
- **Make sure that any pieces do not enter the gap between the rotor and the stator of the fan motor. Because the rotor is easy to be shaven by pliers and metal pieces may be produced.**
- **Do not let the pliers touch the coil of the fan motor because the coil may be cut or damaged.**
- **Do not distort the bracket by touching with the pliers.**

   2) Remove the fan blade assembly from the shaft of the fan motor by pulling and rotating the fan blade with your hand.
   3) Now, the fan blade assembly will be free.

CAUTION:
- **Do not use this removed fan blade again. Becausethe hole (for shaft) in it may become bigger than a standard one.**

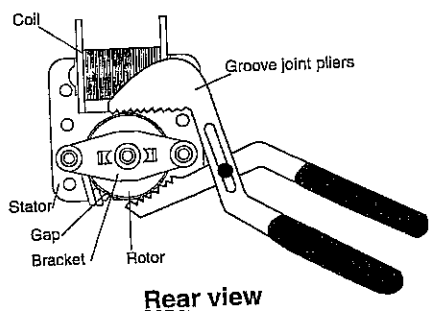
9. Remove the two (2) screws holding the fan motor to the fan duct.
10. Remove the one (1) screw and nut holding the thermal cut-out angle to the fan motor.
11. Now, the fan motor is free.

INSTALLATION

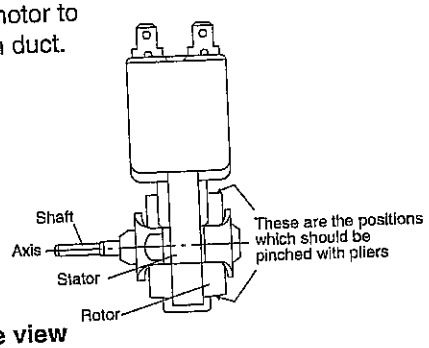
1. Install the thermal cut-out angle to the fan motor with the one (1) screw and nut.
2. Install the fan motor to the fan duct with the two (2) screws.
3. Install the fan blade assembly to the fan motor shaft according to the following procedure.
   1) Hold the centre of the bracket which supports the shaft of the fan motor on the flat table.
   2) Apply the screw lock tight into the hole (for shaft) of the fan blade assembly.
   3) Install the fan blade assembly to the shaft of fan motor by pushing the fan blade assembly with a small, light weight, ball peen hammer or rubber mallet.

CAUTION:
- **Do not hit the fan blade assembly when installed because the bracket may be deformed.**
- **Make sure that the fan blade assembly rotates smoothly after installation.**
- **Make sure that the axis of the shaft is not slanted.**

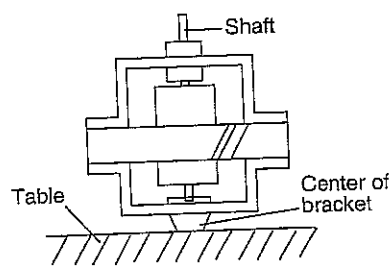
4. Install the fan duct to the waveguide with the two (2) screws.
5. Install the chassis support to the oven cavity, fan duct, magnetron and back plate.
6. Install the damper mounting angle to the chassis support with one (1) screw.
7. Re-connect the wire leads to the fan motor and the thermal cut-out (FAN), referring to the pictorial Diagram.



Rear view



Side view



COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

OVEN LAMP SOCKET REMOVAL

1. CARRY OUT 3D CHECKS
2. Pull the wire leads from the oven lamp socket by pushing the terminal hole of the oven lamp socket with the flat type small screw driver.
3. Lift up the oven lamp socket.
4. Now, the oven lamp socket is free.

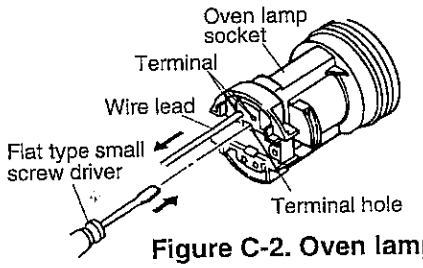


Figure C-2. Oven lamp socket

POSITIVE LOCK® CONNECTOR REMOVAL

1. CARRY OUT 3D CHECKS.
2. Pushing the lever of positive lock® connector.
3. Pull out the positive lock® connector.

CAUTION: WHEN YOU (SERVICE ENGINEERS) CONNECT THE POSITIVE LOCK® CONNECTORS TO THE TERMINALS, CONNECT THE POSITIVE LOCK® SO THAT THE LEVER FACE YOU (SERVICE ENGINEERS).

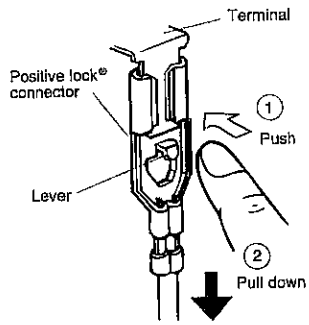


Figure C-3 Positive lock® connector

POWER SUPPLY CORD REPLACEMENT

Removal

1. CARRY OUT 3D CHECKS.
2. Remove the one (1) screw holding the green/yellow wire to the back plate.
3. Disconnect the leads of the power supply cord from the noise filter, referring to the Figure C-4 (a).
4. Release the power supply cord from the back plate.
5. Now, the power supply cord is free.

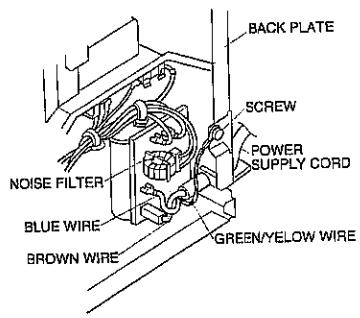


Figure C-4 (a) View of Installed Power Supply Cord

Re-install

1. Insert the moulding cord stopper of power supply cord into the square hole of the back plate, referring to the Figure C-4 (b).
2. Install the earth wire lead of power supply cord to the back plate with one (1) screw and tight the screw.
3. Connect the brown and blue wire leads of power supply cord to the noise filter correctly, referring to the Pictorial Diagram.

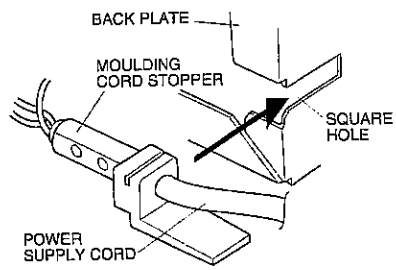


Figure C-4(b). Installation of Power Supply Cord

CONVECTION HEATING ELEMENT OR CONVECTION FAN MOTOR REMOVAL

1. CARRY OUT 3D CHECKS.
2. Remove the one (1) screw holding the green/yellow wire of the power supply cord to the back plate.
3. Release the power supply cord from the back plate by removing the mounting cord stopper from the square hole.
4. Remove the one (1) screw holding the capacitor holder to the back plate.
5. Release the capacitor holder from the back plate.
6. Remove the one (1) screw holding the air duct to the back plate.
7. Remove the air duct from the back plate.
8. Remove the seven (7) screws holding the back plate to the chassis support, waveguide, convection duct and the base plate.
9. Remove the back plate from the oven.
10. Disconnect the wire leads from the thermistor, convection motor, thermal cut-out and the convection heating element.
11. Remove the ten (10) screws holding the convection duct to the oven cavity.
12. Remove the convection duct from the oven.

CONVECTION HEATING ELEMENT

13. Remove the two (2) screws holding the convection heating element to the convection duct.
14. Remove the one (1) screw holding the convection heater angle to the convection duct.
15. Remove the one (1) screw holding the convection air angle C to the convection duct.
16. Remove the one (1) screw holding the convection air angle D to the convection duct.
17. Now, the convection heating element is free.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

CONVECTION MOTOR

13. Remove the one (1) nut, spring washer and plate washer holding the convection fan to the convection motor shaft.
14. Remove the convection fan from the convection motor shaft.
15. Remove the two (2) screws holding the convection motor angle to the convection duct through the rear heat cover.
16. Remove the pipe, the auxiliary fan and one (1) washer from the convection motor shaft.
17. Remove the two (2) screws holding the convection motor to the convection motor angle.
18. Pull out one (1) pin from the convection motor shaft.
19. Now, the convection motor is free.

GRILL HEATING ELEMENT ASSEMBLY REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the wire leads from the grill heating elements and the thermal cut-out (GRILL).
3. Remove the two (2) screws holding the exhaust duct assembly to the oven cavity.
4. Remove the three (3) screws holding the damper duct to the oven cavity.
5. Remove the one (1) screws holding the AH sensor assembly and the sensor cover to the exhaust duct.
6. Remove the exhaust duct assembly from the oven cavity.
7. Push the two tabs holding the grill heating element assembly to the oven cavity.
8. Release the grill heating element assembly from the oven cavity by sliding the cover.
9. Now the grill heating element assembly is free.

DAMPER MOTOR REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the wire leads from the damper motor.
3. Remove the one (1) screw holding the damper motor to the damper motor angle.
4. Release the one (1) tab of the damper motor from the slit of the damper motor angle.
5. Now, the damper motor is free.

ROTISSERIE MOTOR REPLACEMENT

REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the wire leads from the rotisserie motor.
3. Remove the two (2) screws holding the rotisserie motor angle to the oven cavity.
4. Remove the rotisserie motor angle with the rotisserie motor.
5. Remove the two (2) screws holding the rotisserie motor to the rotisserie motor angle.
6. Now, the rotisserie motor is free. And also the rotisserie bearing and rotisserie coupling are free.

INSTALLATION

1. Install the rotisserie motor to the rotisserie motor angle with two (2) screws.
2. Install the rotisserie bearing to the oven cavity.
3. Install the rotisserie coupling to the rotisserie motor shaft.
4. Install the rotisserie motor angle with the rotisserie motor and the coupling to the oven cavity with two (2) screws.

TURNTABLE MOTOR REMOVAL

1. Disconnect the oven from power supply.
2. Remove the one (1) screw holding the turntable motor cover to the base plate.
3. Disconnect the wire leads from the turntable motor.
4. Remove the two (2) screws holding the turntable motor to the thermal cover bottom.
5. Now, the turntable motor is free.

NOTE: When the coupling or O-ring is replaced with a new one, the grease (Shinetsu Silicone grease G420 of Shinetsu Chemical Co. Ltd.) must be applied as shown Figure C-5. If the grease is not applied, the coupling and O-ring may be damaged.

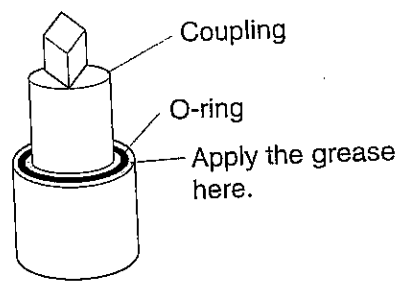


Figure C-5. Grease applying position.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

MONITORED LATCH SWITCH, DOOR SWITCH AND MONITOR SWITCH REMOVAL

1. CARRY OUT 3D CHECKS.
2. Remove the control panel assembly referring to "CONTROL PANEL REMOVAL".
3. Disconnect the all leads from the switches.
4. Remove each one (1) screw holding the upper latch hook and lower latch hook to the oven cavity.
5. Remove the upper and lower latch hooks from the oven cavity.
6. Push the monitored latch switch downwards while pushing the retaining tab.
7. Push the monitor switch or stop switch rightwards while pushing the retaining tab.

CAUTION: WHEN REMOVING THE SWITCH, DO NOT BREAK THE TABS OF THE LATCH HOOKS.

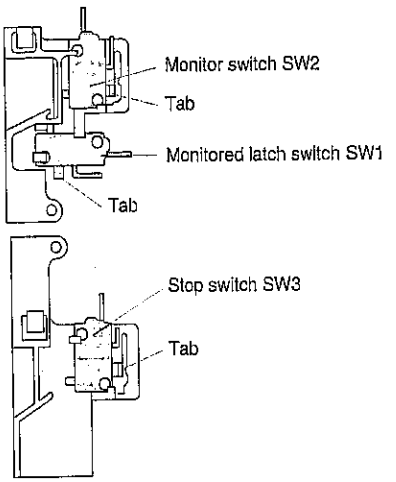


Figure C-6. Switches

MONITORED LATCH SWITCH, DOOR SWITCH AND MONITOR SWITCH ADJUSTMENT

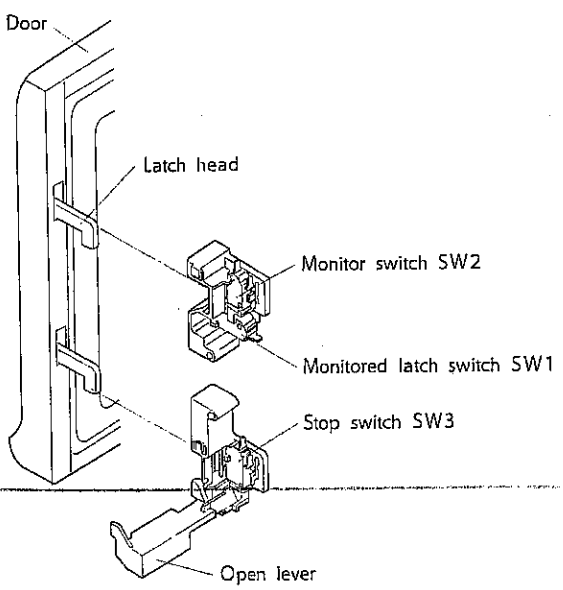
If the monitored latch switch, stop switch and monitor switch do not operate properly due to a mis-adjustment, the following adjustment should be made.

1. CARRY OUT 3D CHECKS
2. Loosen the one (1) screw holding the upper latch hook to the oven cavity front flange and the one (1) screw holding the lower latch hook to the same flange.
3. With the door closed, adjust lower latch hook by moving it back and forward or up and down and then adjust upper latch hook by moving it back and forward or up and down. In and out play of the door allowed by the upper and lower latch hooks should be less than 0.5 mm. The horizontal position of the upper latch hook and lower latch hook should be placed where the latch heads have pushed the plungers of the monitor switch and stop switch with the door closed. The vertical position of the upper latch hook should be placed where the upper latch head has pushed the plunger of the monitored latch switch with the door closed.
4. Secure the screws firmly.
5. Make sure all of the switches operate. If the plungers of the monitored latch switch, stop switch and the monitor switch have not been pushed with door closed, loosen the one (1) screw holding the upper latch hook and/or lower latch hook to oven cavity front flange and adjust the upper latch hook and/or lower latch hook position(s).

After adjustment, make sure of the following:

1. In and out play of door remains less than 0.5 mm when door closed and latched. First check upper latch hook position, pushing and pulling upper portion of door toward the oven face. Then check the lower latch hook position, pushing and pulling lower portion of door toward the oven face. Both results (plays of the door) should be less than 0.5mm.
2. The monitored latch switch interrupts the circuit before the door can be opened.
3. The monitor switch contacts of (COM.- NC.) close when the door is opened and the stop switch contacts open when the door is opened.
4. Re-install outer case and check for microwave leakage around the door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

Figure C-7. Switch Adjustment



REPLACEMENT

1. CARRY OUT 3D CHECKS.
2. Remove five (5) screws holding the upper and lower oven hinge to the oven cavity.
3. Now, the lower oven hinge is free.
4. Separate the door assembly and upper oven hinge. Door assembly is now free.
5. Re-install lower oven hinge to the new door assembly.
6. On re-installing new door assembly, secure the upper and lower oven hinges with the five (5) mounting screws to the oven cavity. Make sure the door is parallel with bottom line of the oven face plate and the latch head pass through the latch holes correctly.
7. CARRY OUT 4R CHECKS.

Note: After any service to the door, the approved microwave survey meter should be used to assure in compliance with proper microwave radiation standards. (Refer to Microwave Measurement Procedure.)

ADJUSTMENT

When removing and/or loosening hinges such as in door replacement, the following adjustment criteria are taken. Door is adjusted to meet the following three conditions by keeping screws of hinge loose.

1. Adjust door latch heads at a position where they smoothly catch the latch hook through the latch holes. Refer to latch switch adjustments.
2. Deviation of the door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. The door is positioned with its face depressed toward the cavity face plate.
4. Reinstall outer case and check for microwave leakage around the door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

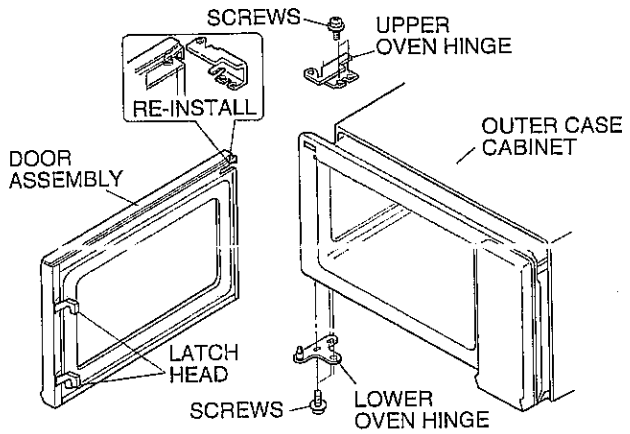


Figure C-8. Door Assembly Replacement and Adjustment

DOOR PARTS REMOVAL

CHOKE COVER REMOVAL

1. Insert an iron plate (thickness of about 0.5mm) or flat type screw driver to the gap between the choke cover and door panel as shown in figure to free the engaging part. The protect sheet may be used not to damage the door panel.
2. Lift up the choke cover, now choke cove is free.

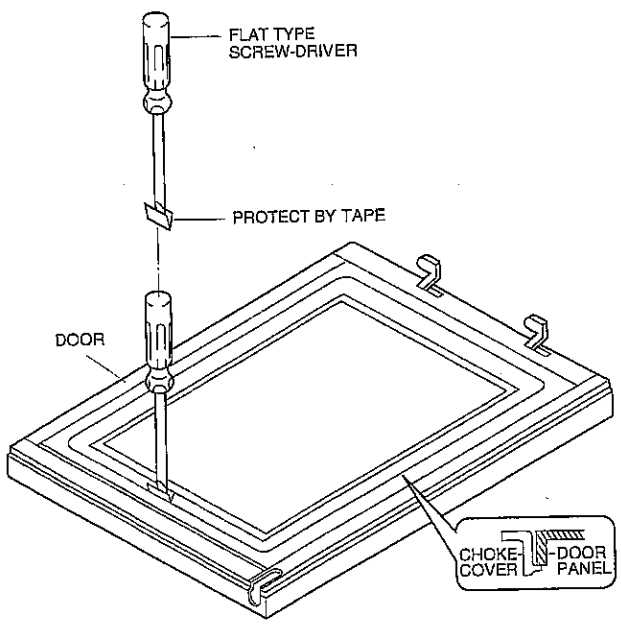


Figure C-9. Choke Cover Removal

DOOR FRAME AND GLASS REMOVAL

Remove the door assembly, referring to from item 1 through item 4 of "DOOR REPLACEMENT".

1. Place the door assembly on a soft cloth.
2. Remove the choke cover, referring to "CHOKE COVER REMOVAL".
3. Remove the eight (8) screws holding the door frame to the door panel assembly.
4. Release the the door frame from door assembly. Now, the door frame is free.
5. Remove the two (2) glass stopper holding door glass to the door frame.
6. Slide the door glass to the up side until stopped by door frame.
7. Lift up the door glass, now the door glass is free.

LATCH HEAD REMOVAL

1. Remove the choke cover, referring to "CHOKE COVER REMOVAL".
2. Release the latch spring from the tabs of the door panel.
3. Release the latch spring from the latch head.
4. Release the latch head from the door panel.
5. Now, the latch head is free.

MICROWAVE MEASUREMENT

After adjustment of door latch switches, monitor switch and door are completed individually or collectively, the following leakage test must be performed with a survey instrument and it must be confirmed that the result meets the requirements of the performance standard for microwave oven.

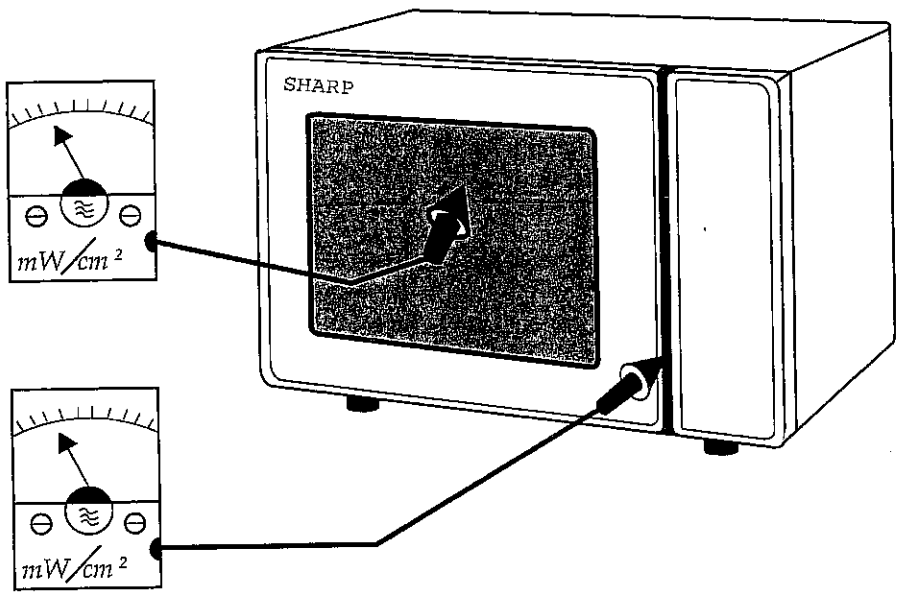
REQUIREMENT

The safety switch must prevent microwave radiation emission in excess of 5mW/cm² at any point 5cm or more from external surface of the oven.

PREPARATION FOR TESTING:

Before beginning the actual test for leakage, proceed as follows;

1. Make sure that the test instrument is operating normally as specified in its instruction booklet.
   Important:
   Survey instruments that comply with the requirement for instrumentations as prescribed by the performance standard for microwave ovens must be used for testing.
   Recommended instruments are:
   NARDA 8100
   NARDA 8200
   HOLADAY HI 1500
   SIMPSON 380M
2. Place the oven tray into the oven cavity.
3. Place the load of 275 ± 15ml of water initially at 20 ± 5°C in the centre of the oven tray. The water container should be a low form of 600 ml beaker with inside diameter of approx. 8.5cm and made of an electrically non-conductive material such as glass or plastic.
   The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
4. Close the door and turn the oven ON with the timer set for several minutes. If the water begins to boil before the survey is completed, replace it with 275ml of cool water.
5. Move the probe slowly (not faster that 2.5cm/sec.) along the gap.
6. The microwave radiation emission should be measured at any point of 5cm or more from the external surface of the oven.



Microwave leakage measurement at 5 cm distance

TEST DATA AT A GLANCE

Parts	Symbol	Value / Data
Fuse	F1	15A 250V
Fuse	F2	F8A 250V
Fuse	F3	F10A 250V
Thermal cut-out	TC1	170°C
Thermal cut-out	TC2	145°C
Thermal cut-out	TC3	190°C (Off point) 175°C (On point)
Thermal cut-out	TC4	95°C (Off point) 75°C (On point)
Thermistor		Approx. 350 kΩ - 155 kΩ at 20°C - 30°C
Grill heating elements	GH	Approx. 22 Ω. x 2 = 44 Ω Insulation resistance > 10MΩ
Convection heating element	CH	Approx. 39Ω Insulation resistance > 10MΩ
Oven lamp	OL	250 V 25W E14
High voltage capacitor	C	1.2μF AC 2100V
Magnetron	MG	Filament < 1Ω Filament - chassis ∞ ohm.
High voltage transformer	T	Filament winding < 1Ω. Secondary winding Approx. 85Ω. Primary winding Approx. 1.3Ω

TEST POINTS ON CONTROL UNIT

In/Out put terminal	Test Point	Volt	Resistance (Disconnect the power and door is closed)
Input terminal (Power supply)	E1 - E3	230V	Approx. 470 Ω
Input terminal (Door switch)	B1 - B2	-	0
Input terminal (Damper switch)	B3 - B4	-	0
Input terminal (Thermistor)	C1 - C3	DC. 5V	Approx. 100 kΩ at 20°C - 30°C
Output terminal (Grill heating element)	N.O of RY4 - A1	230V	Approx. 44 Ω
Output terminal (Convection heating element)	N.O of RY3 - A1	230V	Approx. 39 Ω
Output terminal (Fan motor)	A1 - D1	230V	Approx. 200 Ω
Output terminal (Turntable motor and Oven lamp)	N.O of RY1 - A1	230V	Approx. 174 Ω
Output terminal (Convection fan motor)	A1 - D3	230V	Approx. 180 Ω
Output terminal (Damper motor)	D5 - A1	230V	Approx. 16 kΩ
Output terminal (Rotisserie motor)	D7 - A1	230V	Approx. 15.4 kΩ
Output terminal (Earth)	B2- Chassis	-	0

WARNING: DISCONNECT THE PLUG WHEN MEASURING RESISTANCE.

WIRING DIAGRAM

SCHEMATIC
NOTE: CONDITION OF OVEN
1.DOOR CLOSED.
2." : " OR CLOCK APPEARS ON DISPLAY.

NOTE: ★ indicates components with potentials above 250 V.

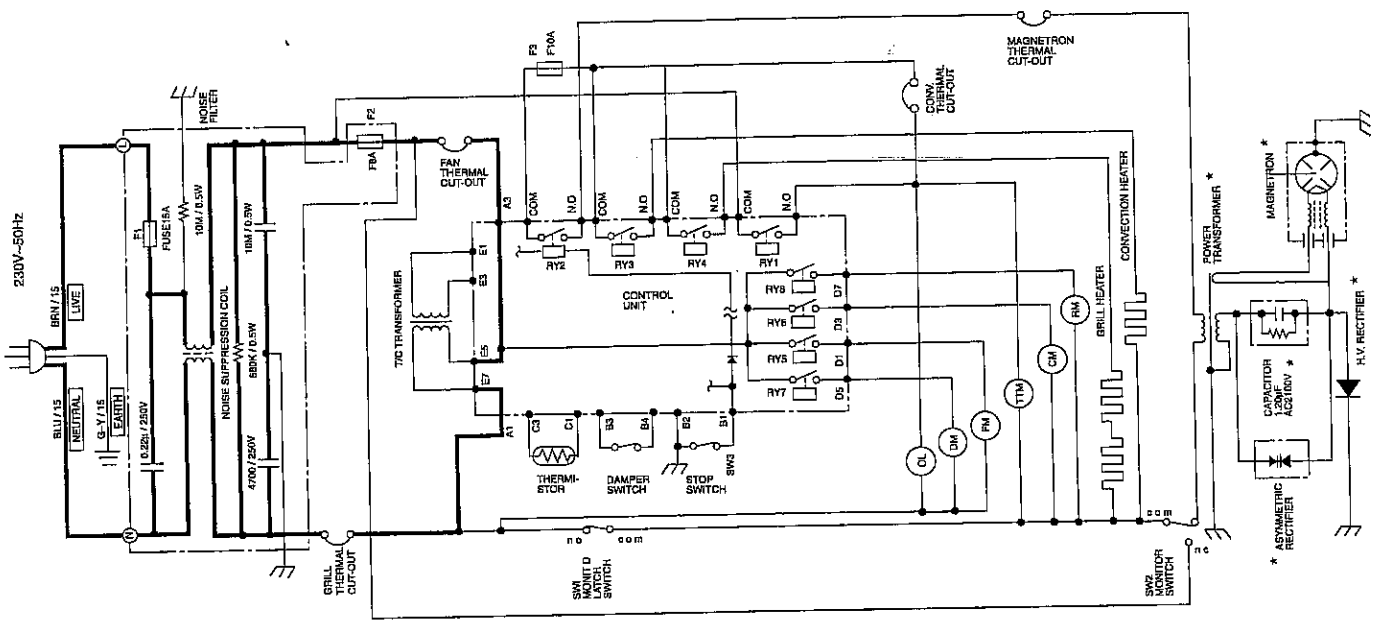


Figure O-1 Oven Schematic-OFF Condition

Note:
AC CORD CONNECTION
BRN : BROWN
BLU : BLUE
G-Y : GREEN AND YELLOW STRIPE
/15 : SECTIONAL AREA OF 1.5mm²MIN.

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. COOKING TIME PROGRAMMED.
3. MICROWAVE KEY TOUCHED ONCE.
4. START KEY TOUCHED.

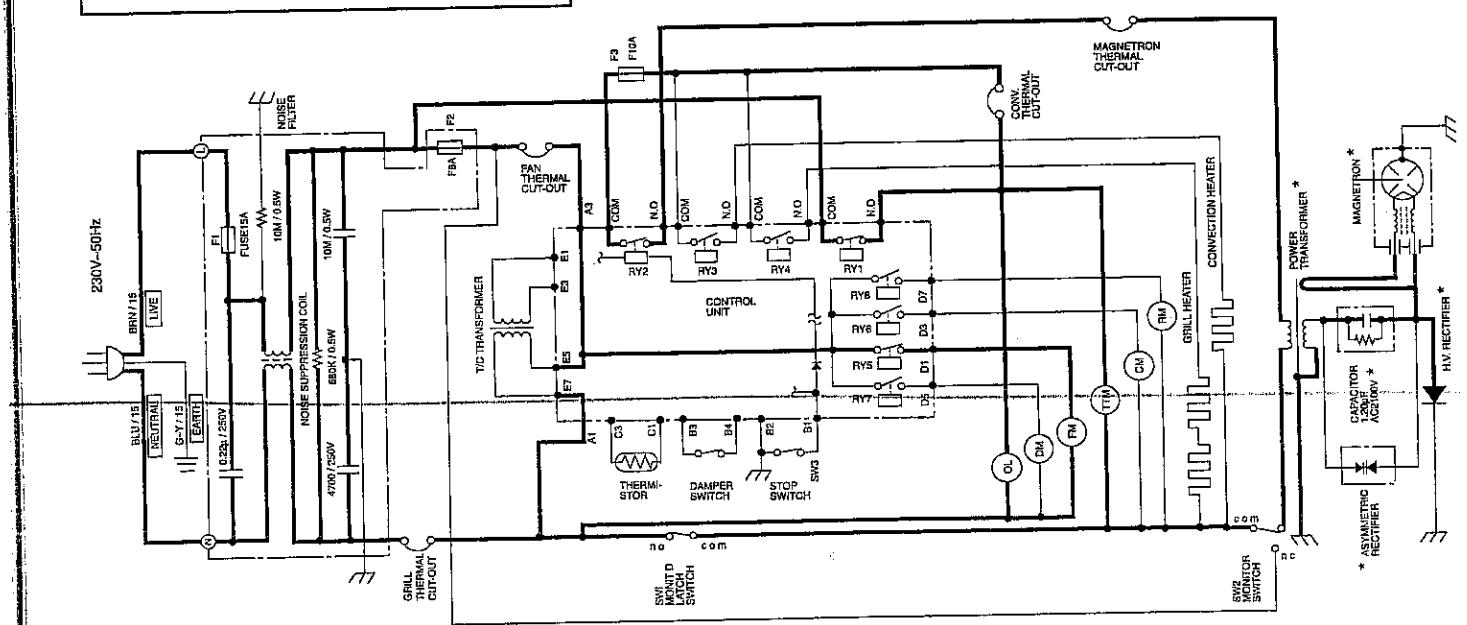


Figure O-2 Oven Schematic-Microwave Cooking Condition

WIRING DIAGRAM

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. COOKING TIME PROGRAMMED.
3. CONVECTION KEY TOUCHED ONCE.
4. START KEY TOUCHED.

NOTE: ★ indicates components with potentials above 250 V.

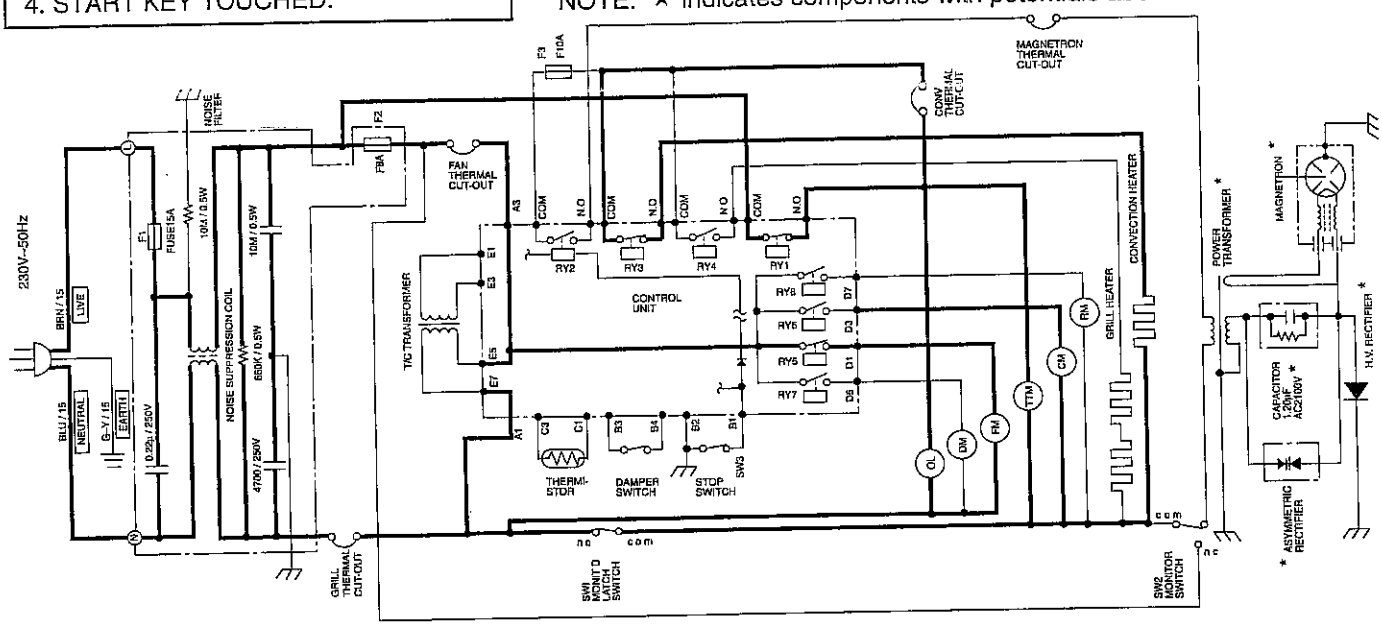


Figure O-3 Oven Schematic-Convection Cooking Condition

Note:
AC CORD CONNECTION
BRN : BROWN
BLU : BLUE
G-Y : GREEN AND YELLOW STRIPE
/15 : SECTIONAL AREA OF 1.5mm²MIN.

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. COOKING TIME PROGRAMMED.
3. GRILL KEY TOUCHED
4. START KEY TOUCHED.

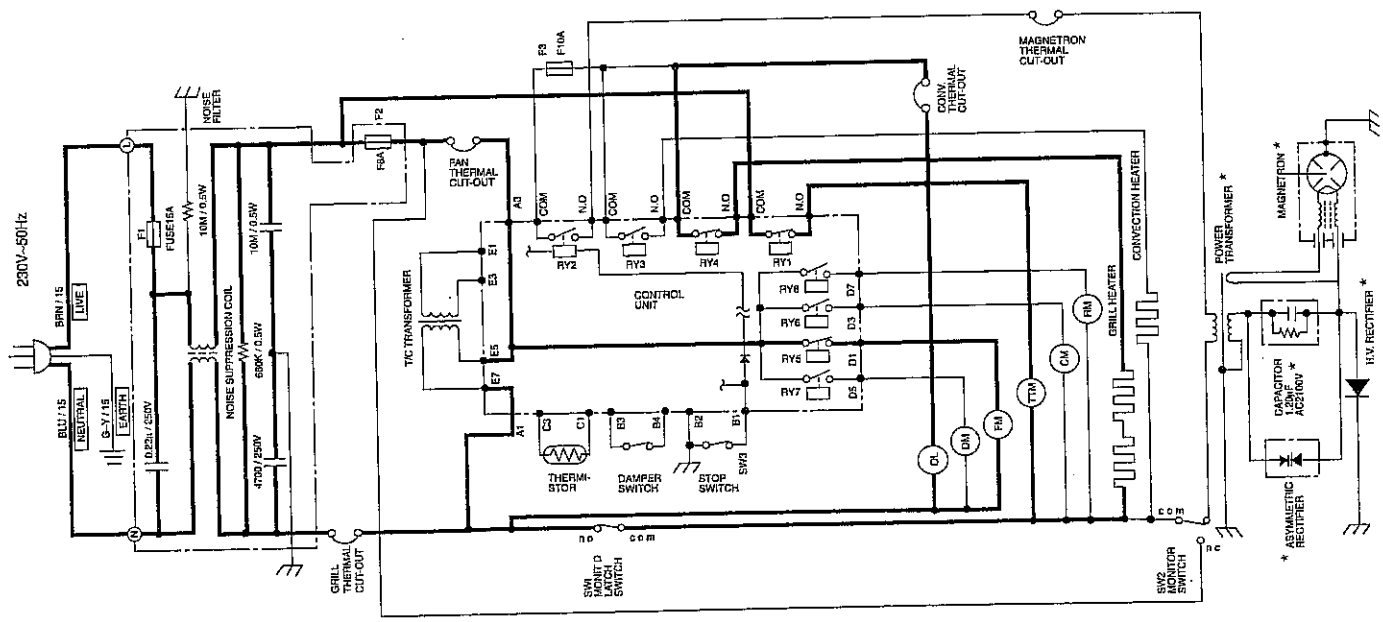


Figure O-4 Oven Schematic-Grill Cooking Condition

WIRING DIAGRAM

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. COOKING TIME PROGRAMMED.
3. DUAL COOK KEY TOUCHED ONCE.
4. START KEY TOUCHED.

NOTE: ★ indicates components with potentials above 250 V.

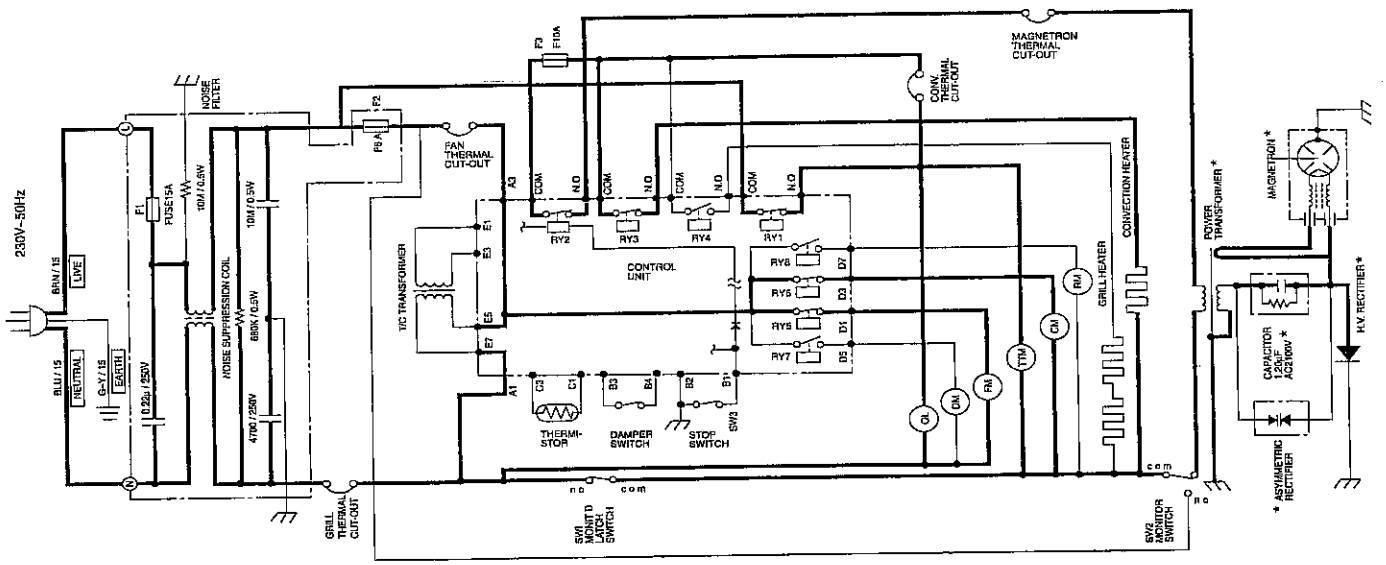


Figure O-5. Oven Schematic-Dual Cooking (Microwave and Convection) Condition

Note:
AC CORD CONNECTION
BRN : BROWN
BLU : BLUE
G-Y : GREEN AND YELLOW STRIPE
/15 : SECTIONAL AREA OF 1.5mm²MIN.

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. COOKING TIME PROGRAMMED.
3. DUAL COOK KEY TOUCHED TWICE.
4. START KEY TOUCHED.

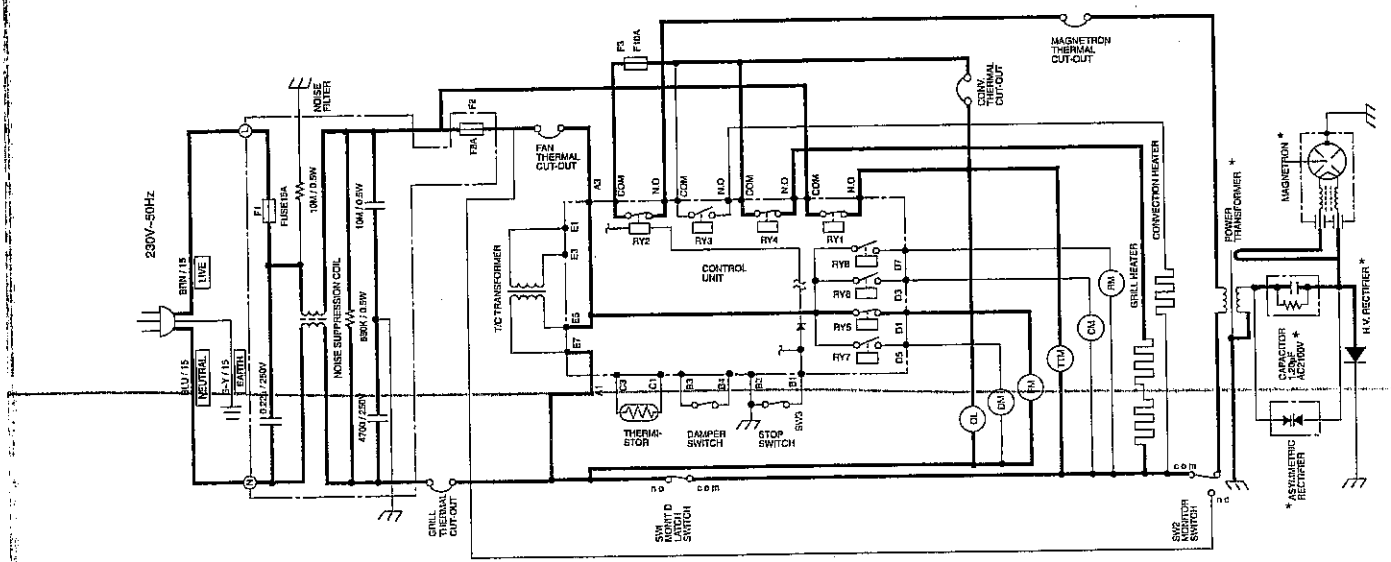


Figure O-6 Oven SchematicDual Cooking (Microwave and Grill) Condition

WIRING DIAGRAM

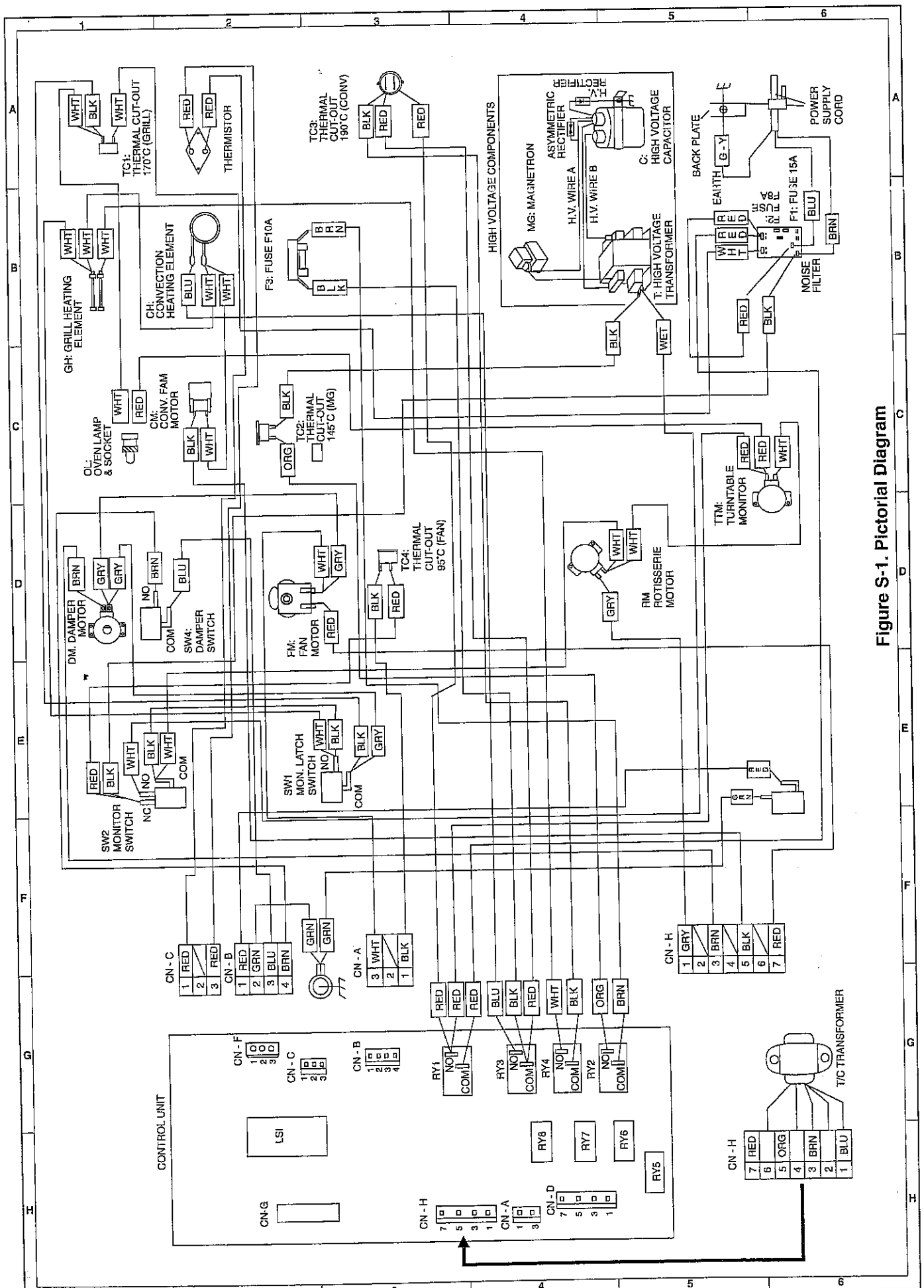


Figure S-1. Pictorial Diagram

WIRING DIAGRAM

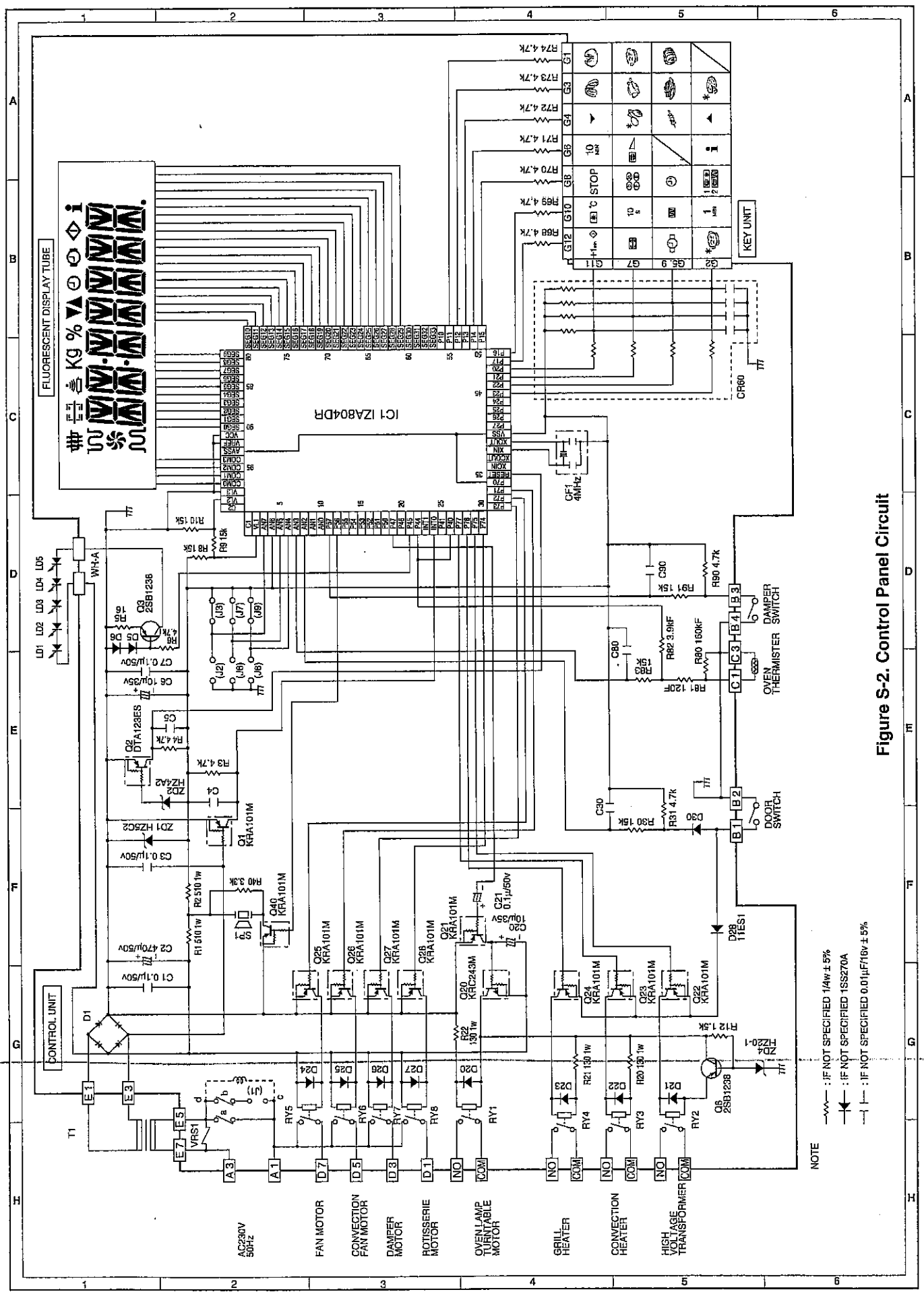


Figure S-2. Control Panel Circuit

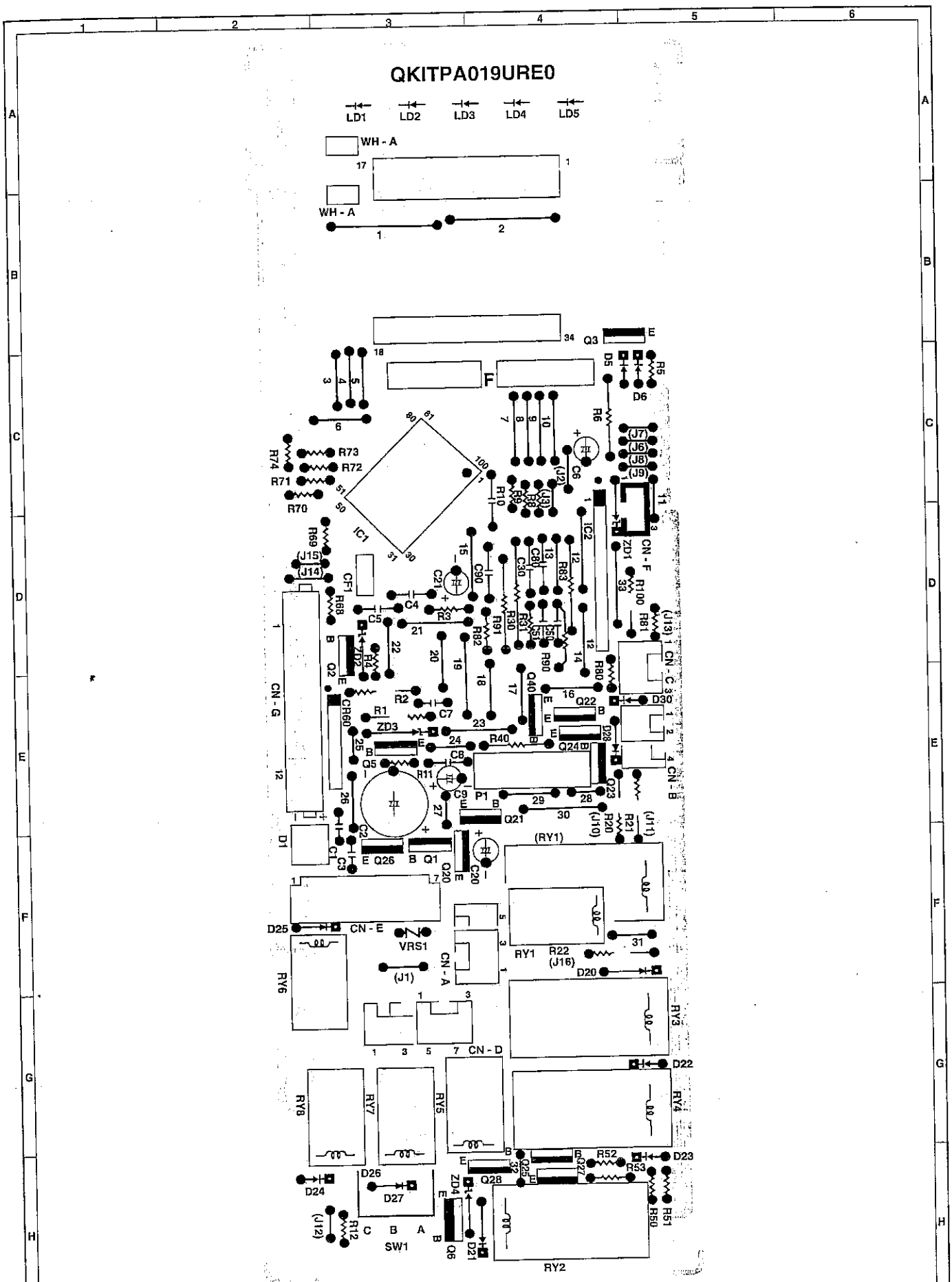


Figure S-3 Printed Wiring Board

PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure / The parts marked "*" are used in voltage more than 250V / "§" Mark: Spare parts delivery section

	REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE	
				ELECTRIC PARTS			
*	C	RC-QZA223WRE0	U	High voltage capacitor	1	AS	*
	CH	RHET-A117WRE1	U	Convection heating element	1	AX	
	CM	RMOTEA289WRE0	U	Convection motor	1	AX	
	DM	RMOTDA183WRE0	U	Damper motor	1	AS	
	F1	QFS-B0019MREO	U	Fuse 15A	1	AC	
	F2	QFS-CA024WRE0	U	Fuse F8A	1	AC	
	F3	QFS-CA020WRE0	U	Fuse F10A	1	AB	
	FM	RMOTEA311WRE0	U	Fan motor	1	AW	
	GH	FHET-A040WRK1	U	Grill heating element assembly	1	BB	
Δ*	MG	RV-MZA182WRE0	U	Magnetron	1	BG	*Δ
	OL	RLMPTA058WRE0	U	Oven lamp	1	AG	
	RM	RMOTDA227WRE0	U	Rotisserie motor	1	AU	
	SW1	QSW-MA110WRE0	J	Monitored latch switch	1	AK	
	SW3	QSW-MA110WRE0	J	Stop switch	1	AK	
	SW2	QSW-MA112WRE0	J	Monitor switch	1	AN	
	SW5	QSW-MA110WRE0	J	Damper switch	1	AK	
*	T	RTRN-A382WRE0	U	High voltage transformer	1	BN	*
	TC1	RTHM-A084WRE0	U	Thermal cut-out 170°C (GRILL)	1	AL	
	TC2	RTHM-A080WRE0	U	Thermal cut-out 145°C (MG.)	1	AL	
	TC3	RTHM-A004WRE0	U	Thermal cut-out 190°C (CONV.)	1	AL	
	TC4	RTHM-A079WRE0	U	Thermal cut-out 95°C (FAN)	1	AL	
	TTM	FMOTDA056WRE0	U	Turntable motor	1	AR	
	1- 1	FACCVA003WRK1	U	Power supply cord	1	AP	
	1- 2	FPWBFA309WRE1	U	Noise filter	1	AT	
*	1- 3	RH-DZA041WRE0	U	H.v. rectifier assembly	1	AV	*
	1- 4	FH-HZA007WRE0	U	Thermistor	1	AH	
	1- 5	QFSHDA019WRE0	J	Fuse holder	1	AE	
	1- 6	QSOCLA011WRE0	J	Oven lamp socket	1	AE	
	1- 7	RTRN-A529WRE0	U	T/C transformer	1	AV	
				CABINET PARTS			
	2- 1	GCABDA003URP0	U	Back plate	1	AT	
	2- 2	GCABUA020URP0	U	Outer case cabinet (K)	1	AY	
	2- 2	GCABUA005URT0	U	Outer case cabinet (W)	1	AW	
	2- 3	GCOVHA343WRP0	U	Turntable motor cover	1	AA	
	2- 4	GDAI-A256WRP1	U	Base plate	1	AT	
	2- 5	GLEGPA028WRE0	U	Foot	4	AA	
				CONTROL PANEL PARTS			
	3- 1	DPWBFA043URU0	U	PWB assembly insp	1	BP	
	3- 1A	QCNCMA434DRE0	U	2-pin connector (CN-A)	1	AB	
	3- 1B	QCNCMA433DRE0	U	4-pin connector (CN-B)	1	AM	
	3- 1C	QCNCMA410DRE0	U	2-pin connector (CN-C)	1	AB	
	3- 1D	QCNCMA412DRE0	U	4-pin connector (CN-D)	1	AD	
	3- 1E	QCNCMA230DRE0	U	4-pin connector (CN-E)	1	AC	
	3- 1G	QCNCWA057DRE0	U	12-pin connector (CN-G)	1	AE	
	3- 1H	RLCDSA056DRE0	U	Liquid Crystal Display (LCD)	1	AN	
	3- 1I	QW-QZA003URE2	U	Lead wire (WH-A)	2	AB	
	3- 1J	LHLD-A003URF1	U	LCD holder	1	AC	
	3- 1K	PSHEPA573WRE0	U	LED sheet	1	AF	
	C1	VCKYD41HF104Z*	U	Capacitor 0.1 uF 50V	1	AC	
	C2	VCEAG51HW477M	U	Capacitor 470 uF 50V	1	AD	
	C3	VCKYD41HF104Z*	U	Capacitor 0.1 uF 50V	1	AC	
	C4-5	VCKYD41CY103N*	U	Capacitor 0.01 uF 16V	2	AA	
	C6	VCEAG31VW106M+	U	Capacitor 10 uF 35V	1	AB	
	C7	VCKYD41HF104Z*	U	Capacitor 0.1 uF 50V	2	AC	
	C20	VCEAG31VW106M+	U	Capacitor 10 uF 35V	1	AB	
	C21	VCEAG31HW104M+	U	Capacitor 0.1 uF 50V	1	AB	
	C30	VCKYD41CY103N*	U	Capacitor 0.01 uF 16V	1	AA	
	C80	VCKYD41CY103N*	U	Capacitor 0.01 uF 16V	1	AA	
	C90	VCKYD41CY103N*	U	Capacitor 0.01 uF 16V	1	AA	
	CF1	RCRS-A012DRE0+	U	Ceramic resonator (CST4.00MGW)	1	AC	
	CR60	RMPTEA011DRE0	U	CR array	1	AG	
	D1	RSRCDA013DRE0	U	Diode bridge (S1NB10)	1	AE	
	D5-6	VHD1SS270A/-1*	U	Diode (1SS270ATA)	2	AA	
	D20-27	VHD1SS270A/-1*	U	Diode (1SS270ATA)	8	AA	
	D28	VHD11ES1///-1*	U	Diode (11ES1)	1	AB	
	D30	VHD1SS270A/-1*	U	Diode (1SS270ATA)	1	AA	
	IC1	RH-IZA804DRE0	J	LSI	1	AX	

PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure. / The parts marked "*" are used in voltage more than 250V. / "§" Mark: Spare parts delivery section

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
LD1-5	VHPSLZ781C9-3+	U	Light emitting diode (LED)	5	AC
Q1	VSKRA101M//-3+	U	Transistor (KRA101M)	1	AB
Q2	VSDTA123ES/-3+	U	Transistor (DTA123ES)	1	AA
Q3	VS2SB1238//-3+	U	Transistor (2SB1238)	1	AC
Q6	VS2SB1238//-3+	U	Transistor (2SB1238)	1	AC
Q20	VSKRC243M//-3+	U	Transistor (KRC243M)	1	AB
Q21-28	VSKRA101M//-3+	U	Transistor (KRA101M)	8	AB
Q40	VSKRA101M//-3+	U	Transistor (KRA101M)	1	AB
R1-R2	VRD-B12HF511J*	U	Resistor 510 ohm 1/2W	2	AA
R3-4	VRD-B12EF472J*	U	Resistor 4.7k ohm 1/4W	2	AA
R5	VRD-B12EF160J*	U	Resistor 16 ohm 1/4W	1	AA
R6	VRD-B12EF472J*	U	Resistor 4.7k ohm 1/4W	1	AA
R8-10	VRD-B12EF153J*	U	Resistor 15k ohm 1/4W	3	AA
R11	VRD-B12EF242J*	U	Resistor 2.4k ohm 1/4W	1	AA
R12	VRD-B12EF152J*	U	Resistor 1.5k ohm 1/4W	1	AA
R20-22	VRS-B13AA131J*	U	Resistor 130 ohm 1W	3	AA
R30	VRD-B12EF153J*	U	Resistor 15k ohm 1/4W	1	AA
R31	VRD-B12EF472J*	U	Resistor 4.7k ohm 1/4W	1	AA
R40	VRD-B12EF332J*	U	Resistor 3.3k ohm 1/4W	1	AA
R68-74	VRD-B12EF472J*	U	Resistor 4.7k ohm 1/4W	7	AA
R80	VRN-B12EK164F*	U	Resistor 160k ohm 1/4W	1	AA
R81	VRN-B12EK121F*	U	Resistor 120 ohm 1/4W	1	AA
R82	VRN-B12EK392F*	U	Resistor 3.9k ohm 1/4W	1	AA
R83	VRD-B12EF153J*	U	Resistor 15k ohm 1/4W	1	AA
R90	VRD-B12EF472J*	U	Resistor 4.7k ohm 1/4W	1	AA
R91	VRD-B12EF153J*	U	Resistor 15k ohm 1/4W	1	AA
RY1	RRLY-A093DRE0	U	Relay (VRB18)	1	AM
RY2	RRLY-A092DRE0	U	Relay (VRB18SP)	1	AP
RY3-4	RRLY-A093DRE0	U	Relay (VRB18)	2	AM
RY5-8	RRLY-A080DRE0	U	Relay (OJ-SH-124LM)	4	AG
SP1	RALM-A014DRE0	U	Buzzer (PKM22EPT-THAI)	1	AG
VRS1	RH-VZA034DRE0+	U	Varistor (10G471K)	1	AD
ZD1	VHEHZ5C2///-1*	U	Zener diode (HZ5C2)	1	AA
ZD2	VHEHZ4A2///-1*	U	Zener diode (HZ4A2)	1	AA
ZD4	VHEHZ201///-1*	U	Zener diode (HZ20-1)	1	AA
3- 2	DUNTKC043URK0	U	Key unit assembly [R-951(K)]	1	AY
3- 2	DUNTKC044URK0	U	Key unit assembly [R-951(W)]	1	AY
3- 2	DUNTKC050URK0	U	Key unit assembly [R-951B(W)F]	1	AY
3- 2-1	FUNTKC043URE0	U	Key unit [R-951(K)]	1	AT
3- 2-1	FUNTKC044URE0	U	Key unit [R-951(W)]	1	AT
3- 2-1	FUNTKC048URE0	U	Key unit [R-951B(W)F]	1	AT
3- 4	HPNLCK003URF0	U	Control panel frame [R-951(K)]	1	AP
3- 4	HPNLCW009URF0	U	Control panel frame [R-951(W)]	1	AP
3- 5	JBTN-K006URF0	U	Open button [R-951(K)]	1	AE
3- 5	JBTN-W006URF0	U	Open button [R-951(W)]	1	AE
3- 6	MSPRCA045WRE0	U	Open button spring	1	AA
3- 7	XEPSD30P10XS0	U	Screw; 3mm x 6mm	4	AA

OVEN PARTS

4- 1	DOVN-A010URK0	U	Oven cavity	1	BR
4- 2	LBNDKA083WRP0	U	Capacitor holder	1	AH
4- 3	MROD-A018WRE0	U	Damper rod	1	AD
4- 4	MSPRTA169WRE0	U	Damper spring	1	AA
4- 5	PCUSGA002URP0	U	Damper cushion	1	AB
4- 6	PPACGA101WRE0	U	O-ring	1	AB
4- 7	PDUC-A592WRP0	U	Damper duct	1	AN
4- 8	PFTA-A028WRW0	U	Damper	1	AD
4- 9	FDUC-A288WRK0	U	Exhaust duct assy	1	AQ
4-10	LANG-A054WRP0	U	Convection heater angle	1	AB
4-11	LANGQA308WRP0	U	Convection motor angle	1	AE
4-12	NFANMA011WRP0	U	Convection fan	1	AD
4-13	NFANMA039WRP0	U	Cooling fan	1	AB
4-14	PDUC-A594WRP0	U	Convection duct	1	AR
4-15	PFPF-A185WRE2	U	Rear heat intercept	1	AK
4-16	PPIPFA013WRE0	U	Pipe	1	AE
4-17	PSKR-A291WRP0	U	Convection air angle B	1	AF
4-18	PSKR-A292WRP0	U	Convection air angle C	1	AD
4-19	PSKR-A293WRP0	U	Convection air angle D	1	AF
4-20	PSKR-A297WRP0	U	Convection air angle A	1	AG

PARTS LIST

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REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE	
4-21	PSLDHA121WRP0	U	Rear heat cover	1	AM	
4-22	FHNG-A002URT0	U	Lower oven hinge	1	AG	
4-23	PHOK-A075WRF1	U	Upper latch hook	1	AF	
4-24	PHOK-A074WRF1	U	Lower latch hook	1	AF	
4-25	LANGQA419WRP3	U	Damper motor angle	1	AG	
4-26	MCAMPA084WRF0	U	Damper cam	1	AC	
4-27	MLEVPA219WRP0	U	Damper lever	1	AC	
4-28	MSPRTA170WRE0	U	Lever spring	1	AE	
4-29	LANGQA420WRP0	U	Rotisserie motor angle	1	AG	
4-30	FFANJA022WRK0	J	Fan blade assembly	1	AF	
4-30-1	MSPRP0038YBE0	J	Fan stopper	1	AB	
4-31	LANGQA154WRW0	U	Fan thermo bracket	1	AA	
4-32	PDUC-A598WRP2	U	Fan duct	1	AN	
4-33	PSKR-A299WRP0	U	Air guide c	1	AG	
4-34	PSKR-A300WRP0	U	Air guide d	1	AD	
4-35	GCOVHA273WRP0	U	Bottom heater cover	1	AG	
4-36	LANGFA170WRP0	U	Chassis support	1	AH	
4-37	LANGKA755WRP0	U	Cavity support angle	1	AH	
4-38	PCOVPA251WRF0	J	Sensor cover	1	AD	
4-39	LFLG-A012WRE0	J	Rotisserie support	1	AM	
4-40	MHNG-A353WRP0	U	Upper oven hinge	1	AF	
4-41	MLEVFA071WRF2	U	Open lever	1	AD	
4-42	NCPL-A034WRE0	J	Rotisserie coupling	1	AA	
4-43	NCPL-A040WRE1	U	Coupling	1	AP	
4-44	PCOVPA303WRE0	U	Waveguide cover	1	AE	
4-45	PCUSGA431WRP1	U	Cushion transformer	1	AA	
4-46	PCUSUA014URE0	U	Waveguide cushion	1	AB	
4-47	PCUSUA016URE0	U	Cushion	1	AD	
4-48	PCUSGA251WRP0	U	Heat cover cushion A	1	AA	
4-49	PSPAGA001WRE0	U	Vibration cushion	1	AA	
4-50	PCUSUA312WRP0	U	Vibration cushion B	1	AA	
4-51	PCUSUA163WRP0	U	Heat cover cushion (convection)	2	AA	
4-52	PSKR-A289WRP0	U	Mg guide	1	AC	
4-53	PDUC-A591WRP0	U	Air duct	1	AF	
4-54	PFPF-A184WRE1	U	Heat intercept right	1	AF	
4-55	PGLSPA448WRE0	U	Lamp glass	1	AD	
4-56	PSLDHA120WRP0	U	Heat cover right	1	AN	
4-57	PCUSGA002URP0	U	Damper cushion A	1	AB	
4-58	PCUSGA004URP0	U	Spacer cushion	1	AD	

DOOR PARTS

Δ	5	CDORFK002URK0	U	Door assembly, complete (K)	1	BS	Δ
Δ	5	CDORFW003URK0	U	Door assembly, complete (W)	1	BS	Δ
	5- 1	DDORFA735WRK0	U	Door panel	1	BH	
Δ	5- 2	GCOVHA269WRF0	U	Choke cover	1	AW	Δ
	5- 2a	GCOVHA011URF0	U	Choke cover B	1	AL	
	5- 2b	GCOVHA012URF0	U	Choke cover C	1	AM	
	5- 3	GWAKPK004URR0	U	Door frame (K)	1	AV	
	5- 3	GWAKPW004URR0	U	Door frame (W)	1	AV	
	5- 4	LSTPPA144WRF0	U	Latch head	1	AL	
	5- 5	MSPRTA168WRE1	U	Latch spring	1	AC	
	5- 6	PGLSPA021URR0	U	Front door glass	1	BA	
	5- 8	XEPSD30P08XS0	U	Screw : 4 mm x 8 mm	9	AA	
	5- 9	LSTPPA003URF0	U	Glass Stopper	1	AB	

MISCELLANEOUS

	6- 1	FAMI-A082WRK1	U	High rack	1	AR	
	6- 2	FAMI-A083WRK1	U	Low rack	1	AR	
	6- 3	FROLPA060WRK0	U	Roller stay	1	AS	
	6- 4	LANG-A006WRE0	J	Skewer prong	2	AH	
	6- 5	LX-BZA059WRE0	J	Fan screw	2	AB	
	6- 6	NSFTTA117WRE1	U	Skewer	1	AR	
	6- 7	JHNDMA027WRT0	U	Handle (right)	1	AL	
	6- 8	JHNDMA028WRT0	U	Handle (left)	1	AL	
	6- 9	NTNT-A040WRE0	U	Turntable	1	AZ	
	6-10	PGISHA054WRE0	J	Ceramic skewer support	1	AA	
	6-11	PSRA-A025WRP0	U	Baking tin	1	AS	
	6-12	TCADCA006URR0	U	Cook book	1	AW	
	6-13	TINS-A080URR0	U	Instruction book	1	AM	
*	6-14	QW-QZA002UREO	U	High voltage wire A	1	AE	*
*	6-15	QW-QZA205WRE0	U	High voltage wire B	1	AD	*
	6-16	LBNDKA082WRE0	U	Wire holder	1	AC	
	6-17	FW-VZA036UREO	U	Thermistor harness	1	AN	
	6-18	FW-VZA030URE3	U	Main harness	1	BA	

PARTS LIST

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REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
6-19	LHLDWA014WRE0	U	Purse lock M	1	AA
6-20	PTUB-A038WRE1	U	Tube	1	AD
6-22	TLABSA055WRR0	U	F10 fuse label	1	AB
6-23	TCAUHA006URR0	U	Caution label	1	AE
6-25	TLABMA429WRR1	U	Menu label (K)	1	AG
6-25	TLABMA430WRR1	U	Menu label (W)	1	AG

SCREWS, NUTS AND WASHERS

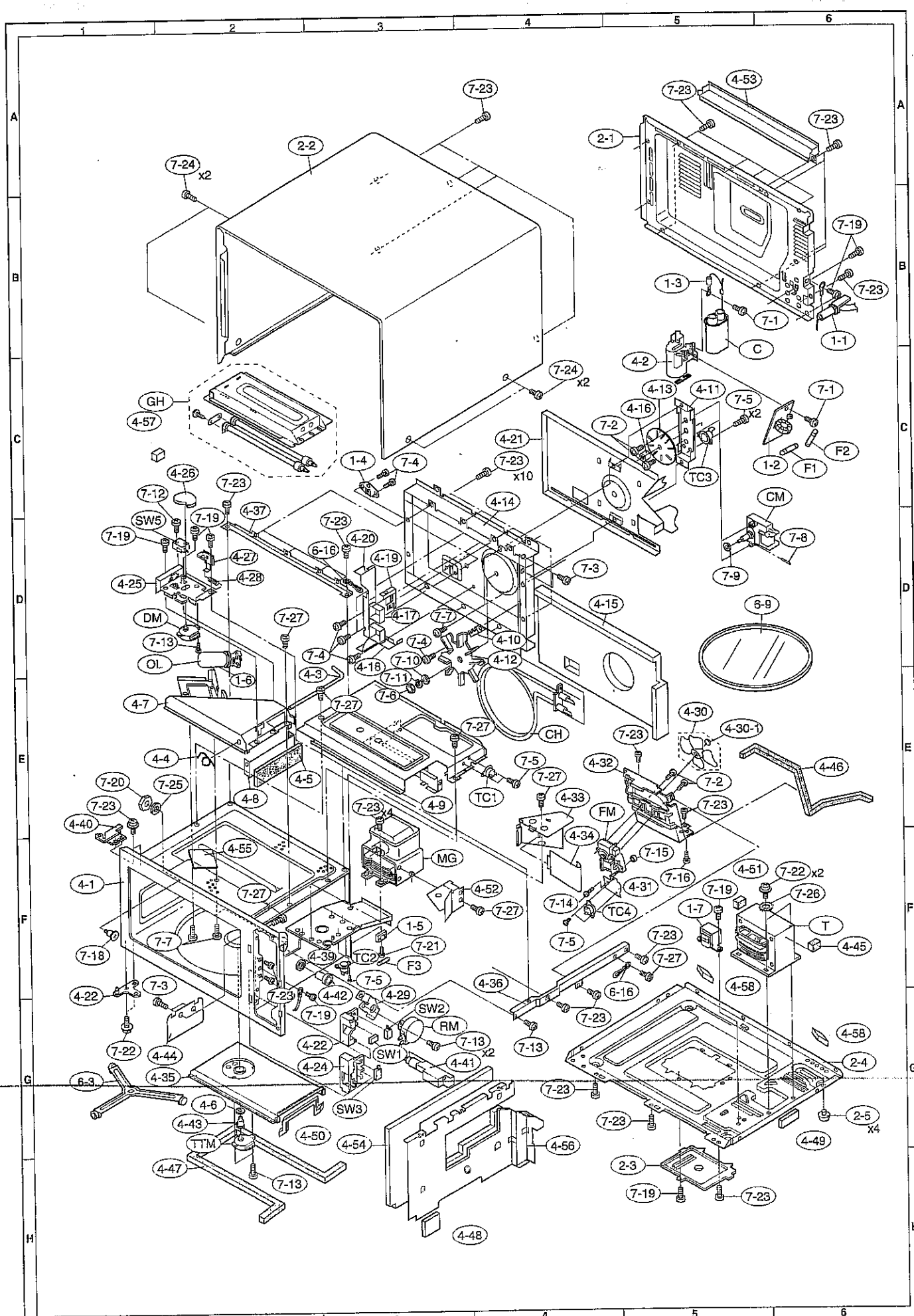
7- 1	XHPSD40P08K00	U	Screw : 4 mm x 8 mm	2	AA
7- 2	XBTSD40P05000	J	Screw : 4mm x 5mm	4	AA
7- 3	XBTUW40P06000	J	Screw : 4mm x 6mm	2	AA
7- 4	XCBWW30P06000	U	Screw : 3mm x 6mm	7	AA
7- 5	XCPSD30P06000	J	Screw : 3mm x 6mm	5	AA
7- 6	XNEUW40-32000	J	Nut : 4mm x 3.2mm	1	AA
7- 7	XOTWW40P06000	U	Screw : 4mm x 6mm	4	AA
7- 8	XPSSP20-20000	J	Pin	1	AA
7- 9	XWHUW50-08000	U	Washer: 5 mm x 0.8 mm	1	AA
7-10	XWHUW40-08000	J	Washer : 4mm x 0.8mm	1	AA
7-11	XWSUW40-10000	J	Spring washer : 4mm x 1.0mm	1	AA
7-12	XCPSD30P16X00	U	Screw : 4 mm x 16 mm	6	AA
7-13	XFPSD40P08000	J	Screw : 4mm x 8mm	1	AA
7-14	XBPSD40P22000	U	Screw : 4mm x 22mm	1	AA
7-15	XNESD40-32000	J	Nut : 4mm x 3.2mm	2	AA
7-16	XOTWW40P10000	J	Screw : 4mm x 10mm	2	AA
7-17	LX-BZA061WRE0	U	Special screw	1	AC
7-18	LX-BZA088WRE0	J	Special screw	5	AH
7-19	XOTSD40P08RV0	J	Special screw	1	AA
7-20	LX-NZ0061WRE0	J	Special nut	1	AA
7-21	XFPSD30P10000	J	Screw : 3mm x 10mm	2	AB
7-22	XFPSD50P10KS0	J	Screw : 5mm x 10mm	48	AA
7-23	XOTSD40P12RV0	J	Screw : 4mm x 12mm	4	AA
7-24	XOTSF40P12000	J	Screw : 4mm x 12mm (K)	4	AA
7-24	XOTSE40P12000	J	Screw : 4mm x 12mm (W)	1	AA
7-25	XWHSD40-08160	J	Washer	1	AA
7-26	XWWSD50-06000	J	Washer : 5mm x 0.6mm	6	AA
7-27	XOTSD40P10000	J	Screw : 5mm x 0.6mm		

HOW TO ORDER REPLACEMENT PARTS

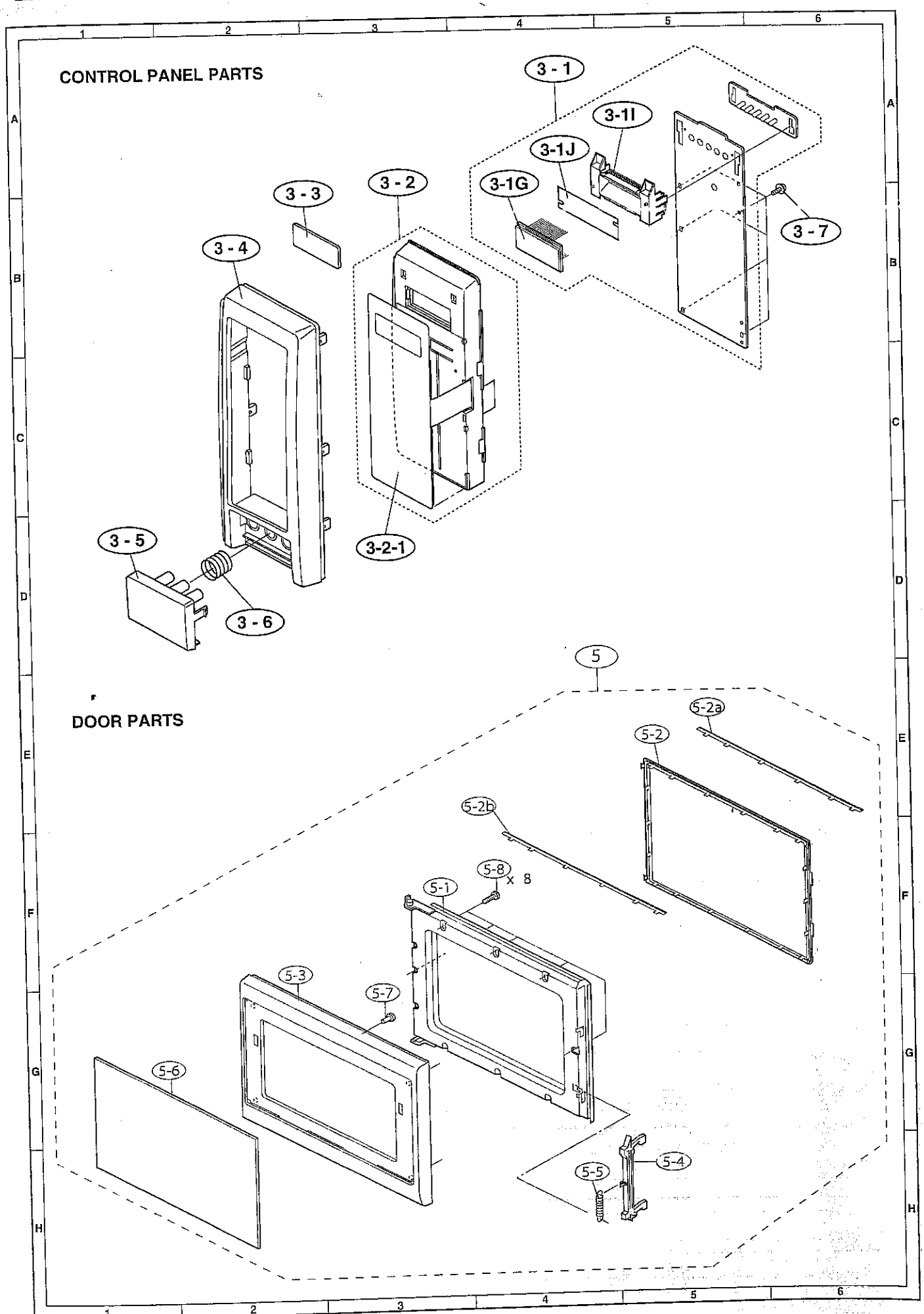
To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

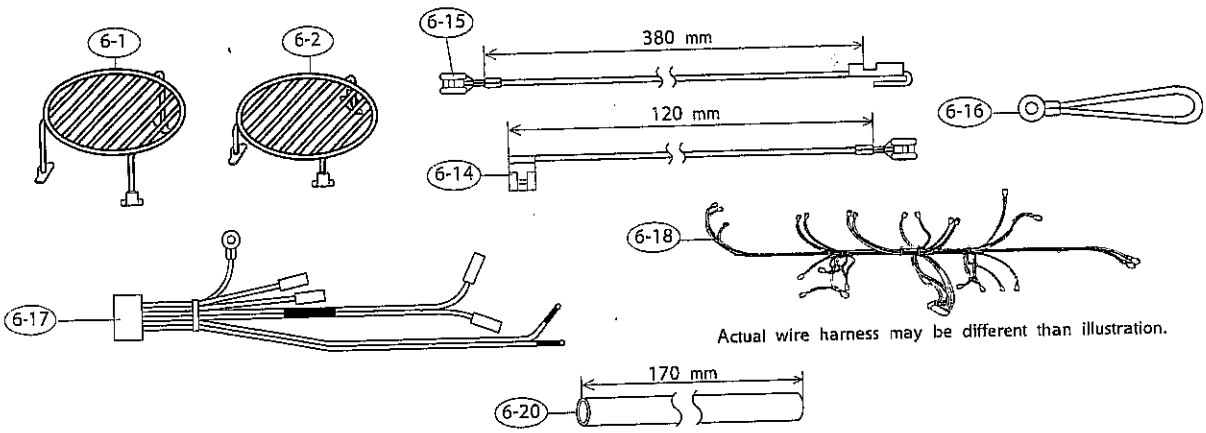
EXPLODED ILLUSTRATIONS



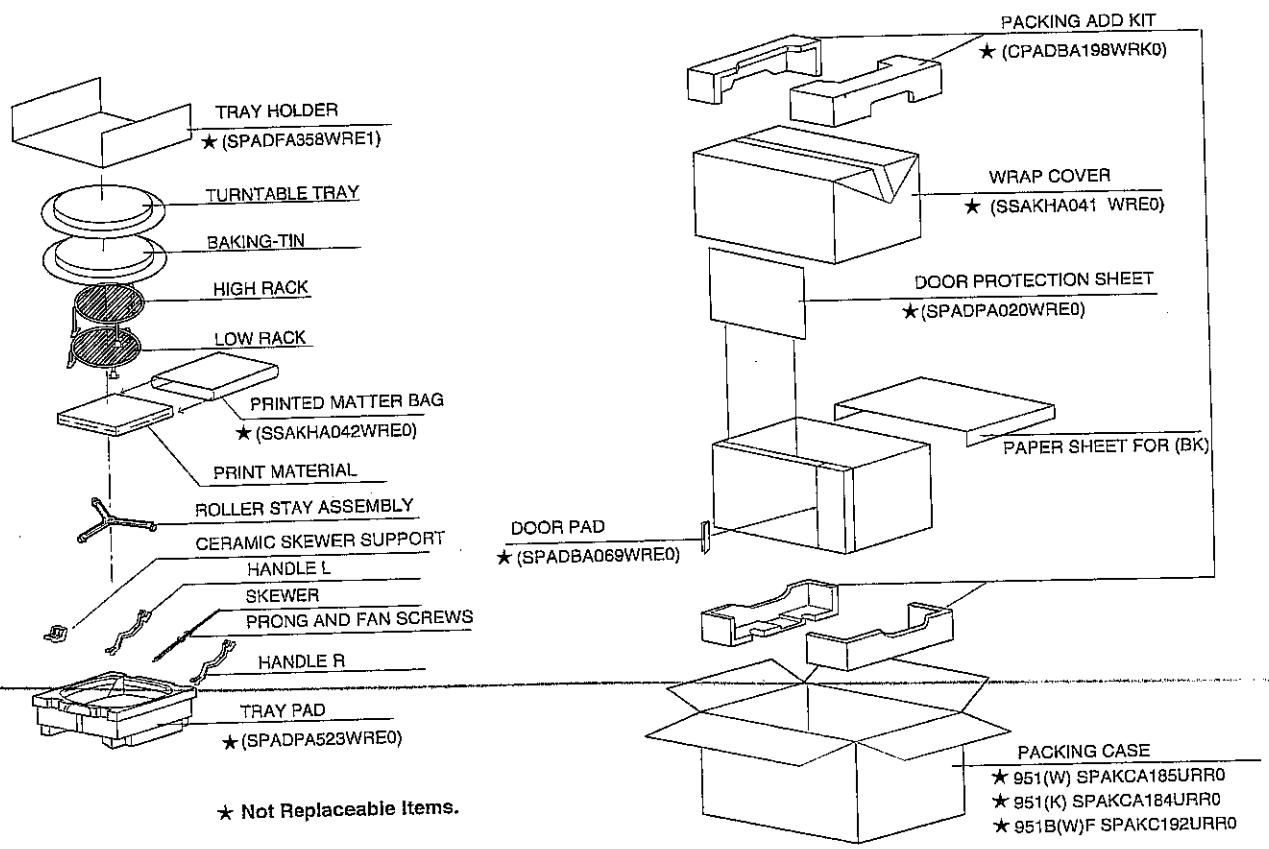
EXPLODED ILLUSTRATIONS



MISCELLANEOUS



PACKING AND ACCESSORIES



★ Not Replaceable Items.

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NOTES

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